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THE AFGHAN PASSES.

SINCE 1874 we have endeavoured to draw attention to the north-western frontier of India, to the tribes which inhabit the bordering mountains, and to the considerations which should have weight in adopting measures for ensuring the establishment of order and safety where rapine and murder now reign supreme. In February 1874 we gave the statistics of that extraordinary Povindah trade which flourishes in spite of all obstacles, and we indicated the obvious policy which its existence seemed to demand. In April 1874 we brought together all the geographical data that exist respecting the basin of the Helmund. In February 1876 we read a paper in which some new information was presented, and attention was called to the numerous important *desiderata* in Afghan geography. Last January we again drew attention to the subject.

The question of our relations with Afghanistan has now become so pressing that attention will certainly be secured for a subject which, a year or two ago, could only excite a languid interest. We, therefore, propose once more to dwell briefly upon some of the salient features of our position along the north-western frontier of British India.

The great River Indus flows along the base of a range of mountains rising abruptly from the plain and forming the escarpment of table lands, which, on the inner side, slope more gradually to the valleys of the Helmund system and of the Kabul. This Sulaiman range, with its northern continuation to and beyond the Safid Koh, is penetrated by upwards of fifty passes leading from Afghanistan to the Indus, and its ridges and valleys are inhabited by a number of fierce and predatory tribes. Since our rule was extended to the Trans-Indus districts of Peshawur, Kohat, Bannu, * and Derah Ismail Khan, after 1849, we have come into contact with these tribes, and a frontier policy of some kind became necessary, as well as the selection of a frontier. We fixed a line at the foot of the mountains, and at the mouths of the passes. So long as the plundering operations of the hill tribes were confined to the hills beyond this line, they were left by us to make what income they could in any way they liked. We merely prohibited the sacking and burning of villages within our border, and the kidnapping of our subjects, and we established fortified posts near the mouths of the principal passes, connected by military roads. As regards the savage tribes beyond the frontier a system of conciliation and forbearance has been pursued, with occasional expeditions to make examples and inflict chastisement for a long continuance of outrages. These duties are performed by the "Punjab Frontier Force," which is composed mainly of Sikhs and Pathans, and musters 12,000 fighting men, including 3000 cavalry.

This system of frontier defence is not progressive. There is nothing in it to alter the ways of the hill tribes, or to lead them to desist from pillage and murder beyond our limits. Yet it is alike the interest and the duty of the rulers of British India to secure the safety of peaceful merchants who approach their dominions, while the permanent adoption of a frontier, the other side of which is inhabited by lawless and aggressive savages, will perpetuate the evil.

Let us pass briefly in review the tribes inhabiting the border mountains from Peshawur to where the Pathan or Afghan race ends, and the Baluch begins. First, there are the Hill Momands from the borders of Swat and the Kabul river; where their capital, Lalpura, stands on the left bank, so that they dominate both sides. Their hills overhang British territory within 25 miles of Peshawur, and they muster about 16,000 fighting men. Their ordinary raids and robberies are chronic, but occasionally, as in 1850-51, they commit a series of audacious outrages. In 1851 they were chastised by Lord Clyde, and the Michni fort was established to overawe them, where, in 1873, Major Macdonald was brutally murdered. Next to the Momands come the more widely-spread Afridis, on the west frontier of the Peshawur valley, in the Kaibar pass, and in the hills between Peshawur and Kohat. They are independent, fierce, and treacherous, and muster 24,000 fighting men. The Afridi is a tall athletic highlander, lean, but muscular, with long gaunt face and high nose. Those of the Kaiber are held to be the most treacherous, and the clans are constantly at feud with each other. Their hills intervene between Peshawur and Kohat, and are crossed by two passes, the Kohat and Jewaki. In 1849 our Government arranged to pay the Afridis an annual sum on condition that they protected these passes; but their outrages obliged Sir Charles Napier to inflict punishment upon them in 1852. Proceeding south we next come to the Arakzais who had their villages destroyed in 1854, and have been tolerably quiet since. In the Kurram pass are the Turis and Jagis, who are said not to be Pathans. Their neighbours, the Zymukht Afghans, are friendly with the Arakzais, but are not numerous, Further south

* Separated from Derah Ismail Khan in 1861.

are the formidable Waziris, the robbers of the Gomul pass, numbering 43,000 fighting men. They are divided into the Mahsud and Kabul Khel Waziris, and it has been necessary more than once to send expeditions against them, though a portion of the Waziris, with whom Herbert Edwardes made a settlement, remained quiet for some time. Speaking generally, all these tribes continue to rob and murder wherever there is a chance of impunity.

Now, it is important to bear in mind that they are all, Momands, Afridis, Arakzais, Turis, Jagis, and Waziris, confined to the outer escarpment of the mountains. On one side of them is the British frontier line below, and on the other the Afghanistan plateaus beyond, which are owned by Ghilzis and others, but not by any of the robbers of the passes. Consequently, if the same power held the plateaus above that now occupies the line of forts below, the intervening tribes would be constrained to refrain from pillage and murder in the passes, as well as on the plains. Those plateaus, with the inner valleys and slopes, are chiefly in possession of the great Ghilzi section of the Afghan nation. At the beginning of the last century the Ghilzis were supreme from the Kaibar pass to Kerman, and in 1722 they overthrew the Sufâwi Dynasty of Persia. But they were conquered by Nadir Shah in 1737. In 1802 they suffered a crushing defeat from Ahmed Shah Durani, at the battle of Sajawan, and have ever since been kept in subjection by the present ruling tribe of Duranis. Yet the Ghilzis are the hardiest and bravest of the Afghans, and showed desperate valour in the war of 1839.

There are two principal divisions of the Ghilzis, Ibrahim and Turan, the former divided into thirteen and the latter into three *khels* or clans. They extend from the northern slopes of the Safid Koh and the neighbourhood of Kabul to Kandahar. Some are engaged solely in agriculture in the valleys, while others are purely pastoral, and move their flocks and herds from the summer resorts on the plateaus to the more temperate slopes in the winter. The Ghilzis occupy the Logar, the Tarnak, and the Arghasan valleys, the country round the Abistadeh lake, and the plains round Ghazni and Khilat-i-Ghilzi. Their approximate number is placed at 100,000 souls, or 30,000 fighting men; but their endless feuds prevent combination.

At the head of the Bolan pass, to the south, there are three tribes. The Achakzais are a branch of the Barakzai or ruling faction of the Duranis. They occupy the water-parting between lake Abistadeh and the Argandab basin, including the Toba mountains, a rugged and desolate region, and number about 14,800 families. The Kakars are in an elevated and unexplored region south of the Ghilzis, which is drained by the Zhob river. All the asafœtida trade is in their hands, and they send down several thousand people annually to Nadully-derrak to collect the gum from wild plants. The Kakars number about 20,000 fighting men, and are on friendly terms with the Ghilzis. Lastly, the Tarins are divided into Safed and Tur Tarins, the former pastoral and independent and the latter agricultural and subject to Kandahar.

We are separated from these traders and producers of the Afghan plateaus and valleys, the Ghilzis, the Povindahs and the Kakars by the formidable passes and ridges of the outer escarpment, and by the wild robbers who inhabit them. The natural difficulties, though not to be despised, are easily to be overcome. If some of the passes are difficult, many others present but slight hindrances to traffic. In the Kaibar pass, leading from Peshawur to Kabul, the road winds through narrow defiles in the mountains. At Ali Musjid, 5 miles within the gorge, the cliffs on either side rise to a height of 1300 feet, slaty and bare, and the defile, though a mile long, is nowhere more than 25 paces broad. Its use is necessary because the gorge of the Kabul river itself is quite impassable. There are, however, two parallel passes of Tahtara and Abkhana. In the extreme south, the Bolan pass, leading from Sind, by Quettah, to Kandahar, is even more defensible than the Kaibar, so that the occupation of Quettah at its head is a wise precaution. The Bolan runs for ten miles in a tortuous course with not sufficient breadth for a dozen horsemen to ride abreast, with rocks rising like walls to a great height on either side. Ahmed Shah Durani invaded India by the Bolan pass.

But between the Kaibar and Bolan passes there are a great number which are more or less frequented, and which do not present the same difficulties. The best known are the Gomul or Ghwalari, which is infested by Waziri robbers, and the Kurram or Paiwar. Both have been explored and described, the former by Captain Broadfoot and the latter by the Lumsden Mission. We are thus enabled to form some idea of the nature of the region which separates the Indus valley from the plateaus of Afghanistan.

The Kurram pass is historically interesting, for it has been used by invading armies on several occasions. The River Kurram, after draining a considerable area in the mountains, flows down to the Indus, and the frontier station of Thal is on its banks. Advancing up the pass the road first crosses a wilderness of stony hills, and then enters the Kurram valley. Here the clear and rapid river, rising on the pine-clad slopes of the Safid Koh to the north and west, rushes in a winding, rocky bed down the centre of a deep fillet of cultivation, sprinkled with villages, each having its magnificent clump of plane trees. The distant view is bounded by lofty mountains clothed with forest. The fort of Kurram is a square enclosure with round towers at the angles, and in the centre of each face, with an inner square forming the citadel. It is occupied by a Naib or Governor, with a garrison, who collect the land tax and transit duties for the Amir. The fort is 118 miles from Kohat by the road, and 80 from Ghazni, as the crow flies. Kurram was the original seat of government of Ilduz, the lieutenant of Muhammad Ghori, who ruled Hindustan from 1193 to 1205 A.D. Ilduz coined money at Kurram,* which was an important post as being on the main line of communication from Ghazni to the Indus; and from Kurram, Ilduz marched to and conquered Ghazni. The valley is inhabited by Turis and Zymukht Afghans, and higher up are the Jagis, all great robbers, but apparently also industrious cultivators. Rice is the principal crop, the grain being stored in caves, and there are clumps of plane trees of great height and beauty. But while one man tills the soil, three are on the sharp look out for enemies.

* See Thomas's *Pathan Kings*, p. 27.

The Turis are Shiah, and the Jagis hold the Suni creed, so that feuds and bloodshed are continuous.

Proceeding from the open valley, the Paiwar pass is an ascent about 1000 feet above it, up a steep stony road through pines and cedars to a height of 7500 feet. The villages consist of a few fortified houses in secluded little glens, but on commanding eminences, with towers of observation. From this point there is another narrow, winding defile, called Hazardarakht, to the summit. The limestone heights on either side are clothed with pines and cedars, arbor vitæ, and a few oaks, while dog roses and wild laburnum, with sweet *labiatæ* form the undergrowth. This leads to the summit plateau of Hazar, which is under snow half the year, and during the other half forms the summer grazing ground of the Ghilzis. It is covered with short, sweet grass, and a stunted growth of *Artemisia*, orchises and lilies. The height above the sea is 9400 feet. The defile of Hazardarakht forms the boundary between the Ghilzis and the Jagis. From Hazar the route descends to the fertile Logar valley, where is the high road between Kabul and Ghazni. The Logar is a tributary of Kabul.

The rapid advance of a force up the Kurram pass to this high road would cut Afghanistan in two, and sever communication between Kabul and Kandahar, while it would threaten Kabul on the flank and turn the Kaibar pass. It would form a rallying point for all Ghilzi clans, Kakars, and Povindahs, who are disaffected, and who think that the Barakzais have held sway over them long enough. The plain of Sajawan, near Ghazni, where heaps of Ghilzi skulls mark the place where the tribe was crushed by the Durani, would not be an inappropriate rendezvous.

The Gomul or Ghwalari pass, to the south of the Kurram, which is used by the gallant Povindah traders, and infested by Wazari robbers, apparently offers very much the same features as the Kurram pass.

We have described the positions of the predatory tribes in the passes, and of the more settled Ghilzis on the plateaus beyond them. It remains to refer to the very remarkable tribe of soldier merchants which fights its way up and down the passes in spite of all obstacles. Its existence seems to point out to us a duty, and also an improved policy as regards this north-west frontier. The story of the Povindahs is as extraordinary as it is interesting.

The Povindahs are a tribe of merchants numbering about 12,000, with 35,000 camels. Their caravans assemble at Ghazni in the autumn, and from the time of Akbar they have been accustomed to fight their way through the Gomul and other passes to the plains of India and back again twice every year. Each autumn sees great kafilahs of these warrior merchants pour down from their distant homes, armed to the teeth, and prepared to do battle with Waziris or other robbers of the passes. They leave their families and herds in the Derajat, and spread themselves over India. In March they again assemble, fighting their way up the pass to the Ghazni and Khilat-i-Ghilzi districts. Thence they send caravans to Kabul, Kandahar, Herat and Bokhara, and all return in time to accompany the tribe down again in the following autumn, moving in three divisions at stated intervals. There are four clans of Povindahs, called Lohanis, who number 1010 families, and pay 600 Rs. a year to the Amir for the right of grazing at Ghazni, besides transit dues; the Nasars, numbering 1850 families, and paying 3000 Rs. to the head of the Turan Ghilzis at Murgha, for rights of pasturage; the Neazis of 6000, and the Kharotis of 1500 tents. Captain Broadfoot accompanied them by the Gomul route in 1839. Their trade is now estimated at 1,000,000*l.*, and its statistics will be found at page 445 of our number for February 1874.

The fact that, in spite of all obstacles, these people should have continued to carry on a trade, year after year, is a proof of its vitality and importance; and that it is capable of vast extension if unimpeded and left to its natural course. The Kakars, with their asafœtida monopoly, and the Ghilzis would equally welcome the opening of the passes. These facts seem to point to the true frontier policy. If as well as the line of forts at the foot of the hills, similar positions were taken up on the inner slopes of the plateaus, with strongly fortified posts at Ghazni, Khilat-i-Ghilzi, Kandahar, and Ghirisk, the predatory tribes would be between two fires. They would have to learn that plunder and murder must not only cease beyond, but also within the hills; and they would be forced to settle down as well-to-do graziers and farmers. The development of the Povindah trade would then proceed without drawbacks, and the Ghilzis and other inhabitants of the Helmund basin would be secured in the possession of their rights. All cause of anxiety from Russian intrigue would also be at an end. Whether this change of frontier policy, which is necessary for the security of British India and for the welfare of all who have occasion to use the passes, can be made with the assent and co-operation of the present or a future Amir, or whether it will only be effected after the Barakzais have ceased to be the predominant clan, depends on the course of events. But that some such change ought to be made and is now foreshadowed, seems evident from the experience of the past.

THE KULDJA QUESTION.*

THERE is good reason to believe that the sudden collapse of the Muhammadan State of Kashgar in the course of last year was a matter of bitter chagrin to Russia, inasmuch as it opened the way to the reinstallation of the Chinese in Eastern Turkestan, *i.e.* of the least conciliating, the most stubbornly unyielding power with which Russia is directly conterminous in Asia. The Chinese Government has never been known to cede a point but under fatal and irresistible pressure, and if she possibly could she would doubtless abrogate every treaty under which she is bound to European powers. But while China frets under the obligations imposed upon her by the Europeans in her seaports, she still cherishes a strong rancorous animosity to that other northern power, whose friendship towards her has been a mere hollow mockery—a power which under various insincere pretences has robbed her of large slices of outlying territory, and which has absorbed vast countries and enormous populations, once, in the days of China's unique prosperity and glory, paying homage at the

* *Vide Geographical Magazine*, July and August, 1874.

foot of the Celestial throne of the Great Bogdokhan or Brother of the Sun. There is no doubt that China is still imbued with the tradition of her past glories, and indulges in the hope of recovering all she can of that authority which once extended over all the states nestling in the Tian-Shan mountain system away almost to the Caspian. Let China, however, once be perfectly assured of the tenacity of that hold which the civilized States of Europe have upon her or her seaboard, that that hold rather offers guarantees of inviolability from the side of her maritime provinces, and she will of necessity abandon all idea of first dissolving a bond which in reality proves to be her mainstay, and at last direct her main efforts against that disguised enemy who has assumed her rights and prerogatives, and who has as much cause to fear the exhibition of her rancour as she is apprehensive of provoking her wrath.

With reference, for instance, to the present Russian possessions constituting the province of the Amour and the maritime province of the Oussouri, China has never really reconciled herself to the transfer of those regions filched by Russia at periods when the Celestial Empire either lay prostrate at the feet of the allies or was convulsed with intestine disorders. She has repeatedly made, albeit unavailing, protests against their illegal appropriation, and she was only cajoled into their cession under conditions which were never fulfilled by Russia. In order, however, to mark her appreciation of the acquisitive and fraudulent nature of Russia she has ever forbidden Russians to overstep her frontier except at places specially provided for traffic in Russo-Chinese conventions, while her frontier officials, with a jealous and uncompromising defiance, have closed every other avenue from the north, imposing penalties on all Chinese subjects who surreptitiously deal with Russians from across the borders. On the Sungari, for instance, every Russian attempting to pass up that river has been turned back with contumely. We find, indeed, that while filching from China morsels of evacuated or unguarded territory Russia has endured at the hands of the Chinese next to insufferable indignities, which, supposing her, by a great stretch of imagination, capable of doing so, it has not been her policy openly to resent.

It is worthy of special observation that from the period of the first Russian Mission to China in 1864 to the present day, the Sovereigns of Russia and their representatives in Asia have ever been referred to and treated by Chinese, from the highest "Urvan" to the meanest frontier official, with a red ball in his hat, with studied contempt and insolence. Nor has Russia ever measured a sword with China and given the Great Bogdokhan a physical proof of her right to a higher consideration and respect.

We began by saying that the re-establishment of Chinese authority in Central Asia has in all probability been a source of great regret to Russia. We shall endeavour to show cause why: we shall, however, at the same time try to persuade ourselves that in given circumstances Russia may find in China a coadjutor in her designs whensoever she may again have occasion to create a diversion against us in the East.

Along her immense line of frontier in Asia, Russia really and practically confronts Persia, the British possessions in India, and China. With respect to each one separately, and to all collectively, she pursues a policy dictated both by the exigencies of her weak position at each section of her distended line, and by the prospective aspects of her situation over the western half of its length: the reverse of this may also be maintained, that she shapes her geographical and military positions in Asia, according to her relations with the powers she so confronts. Thus the one circumstance creates a policy and the other moulds it.

But it is time we touched upon Kuldja. Kuldja is situated in the valley of the River Ili. It was the capital of Chinese Dzungaria, which, with this valley comprised Tarbagatai, Kobdo and Kur-Kara-Usu, and was the residence of the Chinese Governor-General of all the eastern dependencies of the Celestial Empire in Turkestan. In the month of January, 1860, that is two years after the establishment of the late Amîr Yakub's authority in Kashgar, and while the latter was besieging the Tungan rebels of China at Urumtsi, Kuldja, with the only remaining Chinese garrison in Dzungaria, was captured by the Taranchis and Tungans, after fruitless Chinese supplications to the Russians for aid. In July, 1871, Kuldja and the Ili valley were snatched from the rebels by the Russian forces.

The pledges and assurances of the Tsar, and Prince Gortchakof's avowed disapproval of annexations of territory are already matters of world-wide notoriety, but we have taken note of those only which we ourselves have readily received on application. In 1871 the Government of Pekin received its own share of Russian promises in an official declaration made to it to the effect that the occupation of Kuldja was only a temporary measure, and that it should be restored to China whenever a sufficient force could be brought there to hold it against attacks and to preserve order.*

At the same time, General Kaufmann, addressing a deputation of Taranchi and Kirghiz elders at Kuldja, declared to them that "the Russians had not come there for a day, but for ever.† The condition for its surrender are now all fulfilled; the Chinese have numerous forces in the country; they are again absolute masters in Eastern Turkestan, and Dzungaria, having been partially depopulated in the wholesale massacres and emigration which took place during and after the rebellion, there are no people left from whom the Chinese need apprehend any resistance or attack.

It will be remembered that the Russian Government affected to ignore officially the title and authority of the late Amîr Yakub of Kashgar, and that under various pretexts a force was at one time assembled on the Naryn to invade his territories. It happened, however, that we sent an Embassy to Kashgar, that Yakub paid up the claims upon him of Russian traders, and that at that particular time the

* Schuyler's *Turkestan*, vol. ii. p. 188.—"The authorities of St. Petersburg were not overpleased at the occupation of the new territory; and although General Kolpakovsky received the St. George, he did so, not as is customary by the will of the Emperor, but in a still more complimentary way, on the vote of the Chapter of the Order. The Foreign office immediately informed the Chinese Goverment of the occupation of the province, and declared its readiness to restore it to China whenever a sufficient force could be brought there to hold it against attacks and to preserve order."

† *Turkestan Gazette*, 1871.

Chinese were giving full proof of their determination to recover Kashgar in their persevering measures for its re-conquest. These circumstances among others deterred General von Kaufmann from prosecuting his designs upon Kashgar; moreover, it was deemed indispensable in the first instance to provoke hostilities with Kokand, in order to effect the absorption of Ferghana, through which communications with Kashgar were an essential condition of its invasion and tenure. At the same time every preparation was being made by the Russians at Kuldja for attacking Yakub in the rear by securing the passes leading from the Kunges and Tekes valleys, or head-main sources of the Ili river, to Kharashar and Turfan. The geographical position of the Ili valley is such that a moderate force holding it with a command of the southern passes completely turns the flank of an army in Kashgar. On this point Colonel Veniukof has observed that it was considered of immediate primary importance, after occupying Kuldja, to ascertain the number and the practicability of the various passes leading from the Tekes and Kunges valleys into Altyshahr; hence, as he said, this section of the Tian-Shan was explored by Russian officers in 1871, and the four passes, namely, the Muzart, the Kok-su, the Dagyt and the Narat, were examined and reported upon. The Muzart pass was found to have been correctly described as next to impracticable by ancient Chinese travellers, but the other three were all available as gateways into the Yuldus valley, and so directly to Kharashar. In the first instance it was necessary to guard these passes against any attempted invasion by Yakub's troops, who were successfully operating against the Tungans at Urumtsi. In the second place a control of these points of ingress into Kashgar, together with the roads from the Naryn and from Ferghana, would in time have led to the extension of Russian dominion over the lune-shaped territory of Kashgar, and to the erection of a strong Russian outpost in its south-west angle where it impinges on Cashmere. It is true that with the sanction of the Russian authorities Russian merchants were supplying large quantities of grain to the Chinese army gathering for the re-conquest of the lost provinces; yet this service was rendered not with a view to materially aiding the Chinese in their endeavours to recover their lost possessions, but with the object of propitiating them and of making them more amenable to terms in respect to the claim which, in course of time, they were expected to urge. We have for the last half year heard of various unpleasantnesses in the relations between the Russian authorities in those parts and the Chinese Generals and Commissioners in Kashgar. The Russian Governor-General has received communications of a nature which would have merited chastisement had they come from any Muhammadan ruler within the sphere of Russian interests. He has been called upon peremptorily to surrender certain natives responsible to the Chinese for parts played by them in the original rebellion; he has been menaced with an irruption of Chinese troops, in pursuit of such fugitives in no terms of flattery; and ever since the re-occupation of Kashgar by the Chinese, he has been obliged to send scouts and spies amongst them to ascertain their real intentions and to strengthen the Russian forces on the frontier. At the same time the Chinese have called upon the Russian Government to act up to its pledge in regard to Kuldja, and to surrender that place; while, seeing that the Russians show no inclination to act up to their promise, the Chinese have been concentrating their forces at various points on the military road from Urumtsi, through Manas to Takianze, drawing them up in large numbers under the passes into Ili, immediately north of that valley.

We read very little about it in the Russian papers, but we are assured that the Kuldja question is one upon which depend the future relations of Russia and China, and if it is settled amicably it will probably be adjusted *by means of a treaty between them calculated to create no little surprise*, and to afford additional evidence of superior genius in Russian statecraft.

The difficulty, however, of an adjustment of this matter would at first sight appear to be next to insurmountable, for, in the first place, China is claiming a surrender of territory in fulfilment of Russia's solemn pledge.

In the second place, Russia not only desires to retain Kuldja, but she also desires to obtain from China a right of way to the north-western provinces of China proper, and to obtain possession of the valley of the Yuldus up to Kharashar, for the sake of the superior cotton which that district, as well as Turfan, yields in great abundance.

The well-known Russian sinologist, Professor Vassilief, as well as several other Russian authorities on the question, strongly advocate a non-performance of the engagement entered into with China in respect to the cession of Kuldja, on the grounds of the many and incessant insults offered to Russia by China. The Chinese, however, might well insist, and with great prospects of success; they might also safely refuse to open their north-western and western provinces to Russian trade without fear of invoking retribution for their past and present behaviour. It is not, however, so certain to us that they are aware of the weakness of the Russian position on the line which confronts them from the Pacific to the Ili, or to the Russian fort on the Naryn; and they have but to realise to themselves the fact that Manchuria, with its millions of Chinese inhabitants—a country which has not been affected by internal revolution or by famine—affords them an effective support to any argument which they may advance at St. Petersburg.

The Chinese Embassy at St. Petersburg may have been negotiating on these grounds, and it may well be that the Russian Government have come ere this to the conclusion that in the matter of Kuldja it were preferable to adhere to their pledged word, and so in some degree redeem their character.

They might then bracket this fulfilment of a pledge with the much-vaunted retrocession of Shahr-i-Sebz to Bokhara in the year 1870.

ERRATA.

IN our article on Afghanistan in last month's number we inadvertently stated that Major O. B .St. John, R.E., was engaged in the Seistan instead of the Perso-Kelat Mission of 1872. We take the opportunity to correct the following misprints in the same article:—

Page 259, 1st col., line 26, *for* Pishni valley *read* Pishing
" 2nd " " 24, " zaboo " yábú
" " " " 46, " Tajaks " Tájíks

EXPLORATIONS IN GREENLAND.

AT the beginning of the spring of 1878 the Danish Government sent a small party of three gentlemen to Greenland, with the object of exploring and trigonometrically measuring the land between the colonies of Godthaab and Fredrikshaab generally, and especially to explore the inland icefields as far as this was possible with the limited means and the short time at the disposal of the explorers. A report, dated Fiskernæs, August 9th, is now published in the official Government organ, according to which the expedition has obtained very valuable results. Herr Dalager,* who, in 1751, had reached "Nunatak," a mountain which rises out of the ice north of Fredrikshaab, reported that far to the east he observed a series of mountain peaks, which he supposed to be the east coast of Greenland; but although this was generally accepted as true, the question had not hitherto been solved. An exploring party, under the command of Lieut. Jensen, R.D.N., has now succeeded in reaching these mountains, which were situated about fifty miles from the border of the icefields, after infinite toil and no small amount of sufferings. The expedition, consisting of three Danes and one Greenlander, entered the icefields on the 14th July, dragging provisions and instruments on three small sledges; but on the second day the accumulation of loose snow on the ice became very dangerous, and the explorers repeatedly fell into crevasses. The surface of the ice was generally uneven, interrupted with deep crevasses, and in the valleys the rapid streams and small lakes made the route very circuitous, while the danger was increased by heavy fogs, and on the 23rd by a violent snowstorm. On the 24th the foot of the mountain range was reached, but all the toil and sufferings of the explorers appeared to have been useless, as it appeared impossible to ascend the mountains, the fog having again become intense. This was followed by a violent gale from south-east, accompanied with heavy falls of snow, which lasted six days, and as provisions and fuel began to run short, and several of the party felt symptoms of snow blindness, notwithstanding the snow spectacles, it was decided to return, when, fortunately, on the 31st July, the weather moderated and the sky became clear, and on this day the highest mountain was climbed. The height of this mountain was ascertained to be about 5000 feet above the level of the sea, and on the other side of the mountain ridge the icefields were observed without interruption as far as the eye could see, the plateau apparently gradually rising higher and higher. It is now consequently proved that this mountain ridge is not the east coast of Greenland.

To the preceding paragraph—for which we are indebted to the Copenhagen correspondent of the *Scotsman*—I have very little to add. The exploration is mainly interesting in so far as it proves that I, in common with all other Arctic geographers, was wrong in believing that the mountains seen by Dalager 117 years ago were those of the east coast. But otherwise it does not materially alter our generalisation regarding the glacialation of Greenland. It only proves that there are peaks in the interior so high that the great ice-sheet has not been able to cover them, as it has covered the rest of the country. This could not be otherwise, if the "Nunatak"—a general name for any spot surrounded by the inland ice—is 5000 feet over the sea, as this will give it an elevation of at least 3000 feet over the level of the surrounding ice out of which it rises. We must also remember that at this point Greenland is comparatively narrow. There are no grounds for believing that the inland ice of Greenland comes, as do glaciers under ordinary circumstances, from mountain ranges, for no moraine comes over the ice, which could not have been the case if the glacier ice-cap slid down the sides of mountains, or in any way came superiorly in contact with land. That the inland ice rises towards the east was already known. This indeed we might have presaged from the fact that there are comparatively few icebergs pouring out of the east Greenland fjords, showing that the "ice-streams" do not find an outlet on that side of the country.

ROBERT BROWN.

* *Arctic Papers of the R.G.S.* (1875), pp. 7-9.

ORDNANCE TRIGONOMETRICAL SURVEY.

II.

PRIMARY BASE MEASURED ON HOUNSLOW HEATH.

DURING the preliminary operation of tracing the Base and clearing the line on the heath, Colonel Roy, Sir Joseph Banks and the Council of the Royal Society, made enquiry into the kinds of apparatus used by the French and other continental states in measuring Base lines. On this important point they reported that the bases which had hitherto been measured in different countries with the greatest appearance of care and exactness, "have all, or for the most part, been done with deal rods of one kind or another, whose lengths, being originally ascertained by means of some metal standard, were, in the subsequent applications of them, corrected by the same standard." Having thus had many precedents serving as examples to guide them in their choice, it was natural enough that they should pursue the same method in the measurement to be executed on Hounslow Heath. As some difficulty was found in procuring well-seasoned wood of sufficient length, and perfectly free from knots, for the purpose, Sir Joseph Banks applied to the Admiralty for assistance in this respect. The result was that he went to Deptford, where an old New England mast, and one of Riga pine was cut up, and deals of the latter chosen as the best, from their extreme smoothness.

Those deals of Russian pine were placed in the hands of Mr. Ramsden to construct measuring rods on the French model. However, that ingenious mechanic had not much confidence in wood for determining out-door measurements with accuracy, and Colonel Roy was dubious on the point, thinking that metal would be less liable to changes of temperature. Accordingly it was arranged that a steel chain should be made and used experimentally, while the rod apparatus progressed slowly and carefully in its manufacture. This instrument was executed in time to be on the field when the track for the Base was two-thirds cleared. This chain was constructed on the same principle as that for winding up the mainspring of a watch on the ratchet, or unwinding on the barrel. It consisted of a hundred links, each one foot long, and

comprised three parts, namely, one long plate and two short ones, with circular holes at the extremities, for steel pins to join the links together. It was so accurately constructed that when stretched out on the ground all the long plates lay edgewise, so that if a person took hold of the brass handle and gave it a jerk the motion was communicated in a few seconds to the other end, thereby describing a beautiful serpentine line.

It is not necessary to enter into any details of this experimental measurement with the steel chain. Suffice it to say, that five soldiers were required for the proper management of it—two at each end, and one towards the middle, to bear it up in any particular place over rough ground. At the commencement a steel arrow was placed in the handle at the forward end, and the chain strained to the rear; then it was drawn on until six chain lengths, or 600 feet, were measured off. In this manner the first measurement of 7800 feet was completed in three and a half hours. This length was again measured both forwards and backwards, and the two measurements only differed one inch and a half in the distance, which was considered a good test of accuracy to prove the excellence of the chain. But it was not intended to rely on that mode of mensuration for this primary trigonometrical Base line as the future standard, for, not only inaugurating the triangulation between Greenwich and Paris, but the survey of the British Isles.

Although the locality of Hounslow Heath in the year of grace 1784 was more notorious as a haunt for rogues than scientific men, nevertheless there was a goodly assemblage of the latter on the field to witness the novel operations. There were present on the 16th June, when this experimental measurement began, Colonel Roy informs us, Lieutenant-Colonel Calderwood, of the Horse Guards, who had from the beginning promised to assist in the operation; Colonel Pringle, R.E., obligingly became a volunteer on the occasion; while Ensign Reynolds of the 34th regiment, who had been employed in surveying the environs of the heath, continued that work during the mensuration. Besides these distinguished military officers, Messrs. Blagden, Cavendish and Lloyd, of the Royal Society were present, with Smeaton, the famous engineer of the Eddystone Lighthouse. But the chief civilian was Sir Joseph Banks who had recently returned from the antipodes with Captain Cook the renowned circumnavigator, when the nation and a generous monarch showered honours upon him, showing that he deserved well of his country and king. Not only was he watchful of the survey proceedings, but he improved the occasion by acting the generous host to all comers of note on the heath, including the king and queen who honoured the camp with their presence. For this purpose he had a separate camp of his own, consisting of marquees fitted up in elegant style, and tents stored with all the accessories for cooking, and serving up refreshments.

On this interesting feature of amenities attending the inaugural operations on Hounslow Heath, Colonel Roy expressed himself in the following terms, while reading his report before the Royal Society:—"Before I proceed further, I think it here incumbent on me very gratefully to remark that your very worthy President, ever zealous in the cause of science, had repeatedly visited the Heath, to offer aid, if such had been necessary, while the first and rougher part of the operations were going on. Now, that others of a more delicate nature were to commence, and where it was of importance that those entrusted with the execution should meet with as few and as short interruptions as possible, he not only gave his attendance from morning to night in the field during the whole progress of the work; but, also, with that liberality of mind which distinguishes all his actions, ordered his tents to be continually pitched near at hand, where his immediate guests, and the numerous visitors whom curiosity drew to the spot, met with the most hospitable supply of every necessary and even elegant refreshment. It will be easily imagined how greatly this tended to expedite the work, and how much more comfortable and pleasant it rendered the labour to all who obligingly took part in it; but more especially to him, who being a volunteer at first, considered himself as bound to persevere in his best endeavours to bring it to a successful issue."

From the foregoing we obtain, within six years of a century ago, a glimpse of the non-scientific accessories of the Ordnance Survey on its first field days; and it is to be regretted that the early annals do not supplement the technical details by more information of a similar description. No doubt the newspapers of the day, though few and far between in publication, contained notices of the progress of an encampment for a purpose so peaceful and novel. The proximity of Hounslow Heath to London brought numbers of metropolitan visitors, and as the highway from Staines passed through the track for the Base, vehicles of all descriptions could drive close up to the line of operation. Indeed, from a passage in the diary of Colonel Roy, their number interfered with the measurement as it approached and crossed the embankments of the road. Many of the nobility and gentry, especially large landed proprietors, evinced considerable interest in the undertaking, as it would ultimately affect the boundaries of their estates, some beneficially, others the reverse. The general public—who probably had only a vague conception of the importance of measuring five miles of a barren heath with a fine steel chain and wooden rods—flocked to Hounslow on fine days as they would go now to see a volunteer encampment on Wimbledon Common. Altogether, this inauguration of the Ordnance Survey was the topic of the day, from the king down to his meanest subjects in the vicinity of the metropolis, and stamped it from the first field day, as a great national undertaking.

In designing the wooden rods it was intended that they should be twenty-five or thirty feet long, but these lengths being rather unwieldy, twenty feet was thought better. Accordingly, three such rods, about two inches square, were made of Riga red pine, and enclosed within strengthening apparatus to protect them from injury. Their extremities were tipped with bell-metal two inches deep, and one inch and a quarter broad. Being trussed laterally and vertically, they were thereby rendered perfectly—at least as to sense—inflexible. A standard deal rod was also made to correct any diminution or increase in the length of those in use. Besides that, Colonel Roy had a brass standard scale, the same length as one held by the Royal Society, for the purpose of marking the rods in feet and fractions, and testing them after each measure-

ment. At every inch there was alternately a dot and an arc; and the three rods were numbered by marking on the surface of the metal at each end, 1·2; 3·4; 5·6—that being the order in which they were to be applied in actual measurement. Including the bell-metal tips, the total length of each rod was 243 inches, and terminated in flat curves of 3½ inches radius. From opposite points the trusses expanded at the middle to 12 inches from the rod. One of them when finished with all its subsidiary apparatus was found to weigh twenty-four pounds.

When in use the rods were not laid on the bare ground, like the chain, but placed upon movable stands, of which seventeen were provided, from two feet to about two feet eight inches in height, some with screws so as to suit the irregularities of the ground, and bring the rods to an exact level. By this means the distance was measured *through the air*, as if the Base line might be seen between its extremities by a telescope, without any intervening object whatever. These stands were also adjusted by a spiral level, with scrupulous accuracy, at a uniform height above the mean level of the sea, according to geodetic curvature. On this delicate adjustment Colonel Roy remarks:—"From the extraordinary levelness of Hounslow Heath, the ascent from the south-east towards the north-west being little more than one foot to a thousand feet in a distance of five miles, it was easily seen that the computed Base line, or that forming a curve parallel to the surface of the sea, at that height above it, would fall so little short of the hypothenusal distance, measured on, or parallel to the surface of the heath, as scarcely to deserve notice. But it was thought necessary, to show how much one end of the Base was really higher than the other, and to convince the world that in an operation of this sort, where so much accuracy was expected, no pains were spared, nor the most trivial circumstances neglected." From this last remark we gather that there were some captious critics at the time—as there generally are on great occasions—who were probably casting reflections on the slowness of the operations. Be that as it may, the grand results of the initial mensuration, as vouched for again and again in the Ordnance Survey annals, are a sufficient refutation of any supposed remissness on the part of the operators.

At length the measurement with pine rods commenced on the 16th of July by Colonel Roy, and Mr. Isaac Dalby—one of the most eminent practical geometricians of his time—while the President and Council of the Royal Society were present to assist if their services were required. They began at the south-east extremity where a hollow wooden tube, or pipe was sunk six feet in the ground close to Hampton Poor House, so that the exact point could be referred to on any occasion which might arise of correction or repetition of the work. A flagstaff in it having been removed, a brass cup filled with water was put in its stead, and all necessary precautions taken for denoting the horizontal line of direction by a rope stretched along the first hypothenuse, and the vertical elevation by means of boneing rods or staves to assist in bringing irregular surfaces into the same plane, by means of a small telescope. The end of the first rod was then brought by a plummet to coincide with the centre of the cup, in which position, being clamped, it marked the *commencement of the Base*. The second rod was next applied to the first, and then the third to the second, one end of each being brought sideways or in coincidence, and the other in direct contact, and thus the exact distance of sixty feet was ascertained. Then the clamps fastening the first rod to its stands being detached, it was carried by two soldiers and laid on the alternate side at the end of the third, and so on in succession, until fifteen rod lengths were measured off. This was the first half of the hypothenuse of a triangle, measuring 600 feet, of which there were forty-five in the whole length of the Base line. Owing to the confined nature of the apparatus for moving the rods into coincidence which required such nicety in adjusting the stands, the time occupied in measuring this short distance of 300 feet was not less than five hours. At that slow rate it would have taken more than a month to measure the five miles. All the executive people were, therefore, of opinion that it would be proper to discontinue the mode of side measurement, and bring the rods into contact. This being done, rapid progress was made, so that by the close of the day they reached the middle of the fourth hypothenuse, a distance of 2100 feet.

A considerable fall of the barometer between the evening of the 17th and the morning of the 19th portended rain, Sunday having intervened, when the operation was suspended. These had scarcely been resumed when it began to rain, and the rods were carried to the camp, where they were severally compared with the standards, and found to exceed them by one thirtieth of an inch, occasioned by the excessive humidity of the atmosphere. The untoward occurrence of wet weather not only checked the progress of the operations, but prevented Colonel Roy exhibiting the *modus operandi* to the King and Queen, who had come from Windsor on purpose to witness the mensuration. During the whole week the weather continued wet and unfavourable; and when the measurement was resumed, the wooden rods were found still to exceed the standard length by the thirtieth part of an inch. This was ominous of uncertain mensuration, which disheartened the operators and their colleagues, and they had to make allowances accordingly in the lengths already measured. The temperature of the air being taken into consideration it was found that it also affected the rods. When the thermometer stood at 61° in the morning with the rods $\frac{1}{30}$ of an inch longer, this excess was reduced to $\frac{1}{67}$ in the evening, with the temperature at 54°. As the operation progressed, the expansion and contraction of the rods continued, according as the temperature rose and fell, and the air became more or less humid. Minute details of the results are given in his papers read before the Royal Society by Colonel Roy. From these it appears that the total expansion of the deal rods, 1370, in measuring, amounted to 24 inches, or 2 feet in 27,404 feet, the estimated length of the Base. Other experiments were subsequently made at Spring Grove, the residence of Sir Joseph Banks, to test their expansion after the exposure to heavy dews at night. The result was, that in a space of time, not exceeding fourteen hours, the excess amounted to 45½ inches on the whole line. Under these circumstances no reliance could be placed in them to determine the length of the Base with implicit accuracy; consequently they were discarded as a failure, notwithstanding their apparent success in foreign countries.

At this juncture a general feeling of disappointment prevailed throughout the camp, when the results of the measurement by pine rods proved to be a failure. It seemed as if all their anticipations of a speedy successful mensuration of the Base were not only checked, but the project was on the verge of being abandoned, for the season at least—especially in the face of weather so inauspicious for so delicate an operation. There was a kind of commotion in the camp, like that of an army defeated in the battle-field. A "council of war" was held to consider the matter, and to devise a new scheme for attacking the atmospheric enemy, who had literally swamped the plans of the indefatigable Colonel and his colleagues. Various devices were proposed to penetrate the entrenchments by stronger material than wood, and less liable to change of temperature and moisture. Colonel Roy himself conceived that metal rods of some kind or another, whose expansion could always be determined by experiment, seemed to promise a result that could safely be relied on. Cast-iron rods he considered would be least liable to expansion, from experiments he had made by Cummins's pyrometer. The cumbersomeness of their weight appeared indeed objectionable; but that inconvenience was either to be submitted to, or the reduction of their length, which was always, if possible, to be avoided.

In this dilemma a happy suggestion for solving the difficulty came from a quarter outside the camp. Lieutenant-Colonel Calderwood of the Horse Guards —who had been prevented by his military duties from being present on the field—came down from London. He informed Colonel Roy that having heard all about the failure of the deal rods, he had been thinking the matter over, and he was of opinion that glass rods would be greatly less liable to expansion, and much lighter than iron. The idea was at once entertained as the most feasible for the occasion, especially as they could be provided much sooner than any metal rods, and the saving of time was a point of consequence. Accordingly, Colonel Calderwood was requested, on his return, to order a trial glass rod at a manufactory of that material. On enquiry he ascertained that solid glass rods of the same dimensions as those of deal could not be made, it being impossible to take at once a sufficient quantity of the melted glass on the irons made for drawing them at the glass-house. But a glass tube could be drawn, as about half the weight of material would do. A trial tube was produced, eighteen feet long and an inch in diameter. This was shown to Mr. Ramsden, who, being averse to the use of a material so brittle, became convinced by Colonel Roy and his colleagues, that there seemed to be no doubt of glass tubes suiting the emergency; and consequently he was ordered to have a sufficient number made and mounted in the most careful manner. This was speedily effected, when it was found that hollow tubes were better for the purpose than solid rods, as they were lighter, and their evenness could be judged by looking through the open part, while it came in handy for devising a new ingenious method for preventing the ends coming in contact without concussion.

When finished and brought on the heath the brittle rods were so enclosed in protective apparatus that only the extreme ends, not more than an inch in length, were visible. They were separately enclosed in deal cases twenty feet in length, eight inches deep, of the same width at the middle, and tapering in a curvilinear manner towards each end, where they were two inches and a quarter broad. Across the bottom of each case, at the middle part and half-way between the ends, three mahogany braces were fixed, on which the tube rested. To the centre brace it was firmly fastened, but free to move through the others towards both ends—to allow of expansion and contraction—which were ground perfectly smooth and at right angles to the bore. Into these, corks, three inches long, were nicely fitted, each holding fast a brass tube, closed at the inner end and opening outwards. Here a steel pin was screwed into the thick part, at one end, with a neck of bell-metal and a button outside; and at the other end it was free, acting by a collar on a spiral spring to soften the contact, like the buffer of a locomotive—which, perhaps, was copied from the crystal measuring rod design.

When this ingeniously-devised apparatus was brought on the Base-line track, the ends of the cases were carefully laid upon the movable stands, which could be raised or depressed by lever screws. Then, as if to complete our comparison of an engine buffer to the brass buttons with spiral springs, each rod had two wheels at the ends, two inches in diameter. By these the three sets of apparatus, each weighing 60 lbs., could be moved slowly and delicately on the top part of the tripod stands, until the ends of the crystal tubes came into contact, the buffer buttons preventing any sudden movement which might increase or diminish the measurement. There were numerous other appliances to this intricate, yet perfect, apparatus; such as ivory scales finely graduated; microscopes to read off the decimal fractions, and thermometers to ascertain the temperature of the glass as well as the air—but these and other details it is not necessary to enter into more particularly.

All the several parts being adjusted the apparatus was set up, as we have sketched it, at the north-west extremity of the Base ground near King's Arbour; being the opposite end to the previous starting point; and the weather proving propitious on the 18th August, the successful measurement was commenced. The method of shifting the glass rods was similar to that with the wooden apparatus, and they were tested by the same brass standard after the measurement of sections. To the great satisfaction of the operators there was no perceptible variation in the lengths, and the execution of the task was effected more speedily than on the first occasion. On Thursday the 19th, five hypothenuses of 600 feet each were measured, and calculations made to compare them with the pine-rod mensuration. On Saturday the 21st operations were resumed under favourable circumstances as to weather, which had induced King George III. to visit Hounslow a second time, as Colonel Roy remarks:—"To honour the operation by his presence for the space of two hours, entering very minutely into the method of conducting it, which met with his gracious approbation." During the week following rapid progress was made towards completion.

It having been circulated among the scientific community in London, that the concluding measurement with the crystal rods would be made on Monday the 30th August there was an increased assemblage of

visitors at the camp. In addition to those already mentioned, Colonel Roy informs us that "The gentlemen who were present at and assisting in the last day's operation, were Captain Bisset, Mr. Greville, Sir William Hamilton, Mr. Lloyd, and Dr. Usher, Professor of Astronomy in the College of Dublin. This last gentleman was so obliging as to observe, with the most scrupulous attention, throughout the whole operation with the glass rods that the contact of the second with the first remained undisturbed while that of the third with the second was completing." In other words, while the measuring rods were placed one after another, there was no sensible concussion when the ends were brought into contact. Altogether there were 1370 measurements with the 20 feet rods; and when the extremity of the Base at Hampton was reached, the last rod overshot the centre of the fixed pipe at the south-east termination, by nearly a foot and a half. This registered the hypothenusal length of the Base as measured, to be 27,402·8204 feet. However, there were certain minute additions and subtractions to be taken into account, which augumented the total. "Hence the true or ultimate length of the Base, reduced to the level of the sea, and making a portion of the mean circumference of the earth, becomes 27,404·0137 feet," or in round numbers about 5·2 statute miles.

Thus came to a satisfactory conclusion, after four months and a half of arduous mental and physical fatigue to Colonel Roy and his assistants, the fundamental measurement of a Base for all future triangulation of the British Isles. From the 16th April 1784, to the 30th August, the party had been encamped on Hounslow Heath during inauspicious weather, which we have seen seriously interfered with their field operations. We have also noted that when the extreme humidity and heat of the season affected the wooden measuring rods, the operators lost all faith in their accuracy, and abandoned them. Though disappointing at the time, this was so far fortunate that had the pine rod measurement been executed under more favourable circumstances it might have marked the primary Base, which was avoided. Had this been done it would, both figuratively and literally speaking, have caused the subsequent triangulation to "lean upon a broken reed." The amount of trouble, vexation, and re-measurements, necessary to correct the discrepancies that might have ensued are incalculable. On the other hand the glass rod measurement has been tested again and again by separate bases of verification throughout England, Wales, Scotland and Ireland, and all of them attest the accuracy by triangulation and computation, of Hounslow Heath Base, to inches and fractions. Moreover, with Colonel Roy and his colleagues' experience of the doubtful value of bases measured by wooden rods, which had been copied from continental usage, it caused British geodists to be dubious of their accuracy. But when the English Base was founded on almost infallible mensuration, the triangulation of our national survey was prosecuted with confidence, and hence the trigonometrical details will bear comparison for accuracy with any other country in Europe.

SAMUEL MOSSMAN.

ST. GERMAIN-EN-LAYE.

ONE of the prettiest spots within easy reach of England seems to be but little known. St. Germains is reached from Paris, Gaze St. Lazare, Chemin de Fer de l'Ouest, where the Dieppe, Rouen, and Cherbourg lines arrive. Trains leave Paris and return every hour, the fare—1st class, 1f. 65c.; 2nd, 1f. 35c.; return tickets, 3f. 30c. and 2f. 75c. The journey is done in about forty-five minutes. The line of rail crosses the Seine three times, and enters St Germains through a short tunnel, that runs beneath the great terrace, a mile and a half long. Passing up a flight of steps inside the station, the traveller enters an open area with the great church on his right and the Château on the left. This is one of the royal palaces of France; it has been used for various purposes for the last hundred years or so, and is now partly undergoing repairs, and partly used as a museum. The Palæolithic department is very rich in stone implements and cave bones. There are dolmens with the remains of things found in them; many of the flint weapons are curious and in a good state of preservation, but there are many that have been collected from various places that were probably formed by nature, and are no evidence of man's art. Bone lance and arrow-heads, needles, and other things, tell of ancient art, hunting, and fighting, and the iron utensils tell us of unrecorded husbandry. Old weapons of bronze and hard wood, with bracelets, rings, and necklaces tell of industry and an early love of ornament. Statues, jewels, bronzes, flags and standards tell of historic times, and in another part of the building indifferent pictures tell us of present art. Not far away is part of the old Château, now called the Hotel Pavillon Henri IV., where ancient terrace-walls tell of the architectural skill of Royal France; where yew-cut cradles still keep royal memories for ever green; and where the eye of the visitor wanders over the rich valley bounded in one point by the fortress-covered hill of St. Valerien. Beyond this, when the weather allows it, the top of the Arch of Triumph is visible, and even that on calm days is to be seen the great Captive Balloon slowly rising from the haze of Paris into the clear atmosphere, with its human burden of thirty or fifty aerial inhabitants. Some one remarked the other day that some of these craters would some day increase the population of the moon. On a clear day the buildings in and beyond Paris tell, as we gaze from the Forest Plateau, of the vast extent of that great city; and taking the Epsom Downs as a similar distance from London, we can contrast the dusty haze of Paris with the black smoke atmosphere of our own capital. St. Germains hanging over the Seine may be compared with our Richmond hanging over the Thames, only the scene is very different; there the river is full of life, though scanty barges ply their trade; here there are but few pleasure boats, no steam launches, but strings of three and seven barges, heavily laden with hundreds of tons, are constantly passing up stream towed by steam-tugs. Some of these have ordinary screws or paddle-wheels, some have wheels on the stern, while one set of powerful boats have no outside propelling power—a chain cable laid along the river bed, passing over the bow, is worked round two drums, in the centre of the boat, turned by steam. This cable is the tow: it

passes round curves in the river for long distances, but how it is fastened at either end, or where the boats cast off from one and take up another, I have not yet heard. The pace of the boat is better than that of a horse-towed barge, and in its passage through the water no wave is raised to wear away the banks or to upset the small canoe. A good road runs along the terrace, with branch roads into the forest, some hard, some in their original sandy condition, all pretty, and most of them shady. Oak, elm, beech, birch vary the monotony a little; sometimes a pheasant, a rabbit, or a deer will cross the road or run amongst the bushes; but in no part of this wide forest does game seem abundant, though I am told that a large sum is given for the right of shooting.

At the present moment one of the great *fêtes* is going on. It began on Sunday, September 1, and is very much like Greenwich or any other suburban fair in England. There are eating and drinking booths. Fowls and legs of mutton roasting before extempore fires; long tables laid out for hungry folk and, somehow there are always such. Gingerbread and lollypops may be gambled for, and this is a European fashion: they pay 10, 50, or 100 cents, and as the numbers turn up in many a varied wheel, the lucky body takes the pick of cake, doll, vase, glass, &c. &c., all arranged in French taste under certain prices; then the passer-by is tempted by the brass ball hung by a chain ready to knock off the head of a doll for a trifle: that done, some little thing rewards success. Then there is the hydraulic gallery, where a ball is supported on a water jet, now rising now falling, to be knocked off by a rifle ball at 15 feet distance—crack, crack! but the ball, of tennis size, still potters on the top of the fountain, and the shooters try again, and laugh and slap one another on the back when one knocks the ball away. Then there is a grand lottery, where we buy several slips of wood with numbers painted on them; when the lottery is full—that is when all the slips are sold—the director rings his bell and twirls his wheel. Spectators watch its circling speed with anxious gaze, it slowly stops, and the number pointed to by the index is called out. The slips are quickly examined—"*Voila la!*" and the paltry prize is won. An old woman pays her 10 cents, and pulls out a wooden handle, a small marble runs round a ring, and tells, when it stops, the blank that belongs to the player; she goes on contented. Billiards, bagatelle, metal tops knocking down little pegs, balls to pitch into big mouths, rabbits and poultry to be shot for, swings, and merry-go-rounds, with fifty seats, little theatres, a cow with a man's arm, monsters of sorts, a circus with its horses crowding on the platform; the Punch and Judy with a tremendous stick—all have their open-mouthed spectators as they have at our fairs. There was one thing here I never saw before, a Mont. Russe had on it a chair holding four people. It was on a frame which ran on rails with four wheels; in the centre of this frame was a pivot on which the chair rested. As the frame ran down the incline the chair spun round on the pivot; one of the women passengers looked as if she would much sooner not have been there; it was in fact a very sensational amusement. Squall goes a pipe close to one's ears! a basket full of French snail shells, each with a tin tube stuck into its back; we buy two for 2½d., and do as the former proprietor did—blow the tube—and oh! if the snail had known the use to which his house was put, would he have built it? The noise was not sluggish.

We were getting so. Evening was drawing on, the lamplighters were trimming the lamps by the thousand. It is a night festival; the fireflies fill the trees and oil lights perfume the tainted air, clowns and harlequins act their old buffoonery, drums beat, trumpets blow, and cymbals clang, and as we slowly get to the skirts of the fair, armless and legless, blind and maimed humanities beg for the halfpence they trust you have not spent; and so at last, with our winnings in our pockets, we dive into the forest paths, for a two-mile stroll back again to Henry IV. We descant on fairs in general, and think that it is a silly thing to put up all those tents, to expose all those gingerbread goods, to endanger so much exuberant health, in the first week of September, after a month in which this locality had only three dry days. But in rain or in sunshine the world must move on, these forest *fêtes* are old institutions, things date from them as they do from Greenwich fair and the Derby Day; and if the folk are drowned by the rain of heaven it is better than being swamped by the liquor of earth. This I will say for the French, their crowds are orderly and quiet, I saw no drunkenness around me; their fun, when it does ooze out, is not uproarious as English fun is: with us it is continuous, here impulsive and spasmodic.

St. Germains follows Paris at present; it is not cheap, lodgings and food are dear. I got four rooms in London lately for less than I pay here for two, but it is Exhibition year, and London did the same, so did Vienna, and so will future cities do.

The climate of St. Germains is very pleasant; since the middle of August we have had no hot day, though it has been steamy in Paris; there it is noisy through the entire twenty-four hours, here the quiet is delicious, the flowers perfume the air, the swallows flit before the windows and around your paths; but there are few small birds, two crows, one magpie, one hoopoo, and a cat and some squirrels frequent the terrace trees, the bark of which is at present infested with a very beautiful but nasty-smelling insect of the bug kind; its black and red coat leads one to soldiers. Their nether garments are crimson and the upper clothing grey, the lower legs are black leather. It is a cavalry regiment, mounted on small, well-bred, light-limbed, bony-headed entire horses that would, in good condition, go through much work—they struck me this morning as being generally in poor condition: the general appearance of each troop would be improved by sorting the colours of the horses better than they are. The men are fair in physique, but sit their saddles like sacks: some of the officer's seats did credit to their school.

There has been an English Church service here till lately, in a useful little church, built and maintained, I am told, by an English lady; it is now closed for the season, and I conclude the visitors will be going soon. As a temporary place of abode it is pleasant, the climate and the forest, the lovely views, and the quiet are delights; there is no reading-room, no library, but Galignani, with a heavy circulating subscription, is in Paris; the English papers reach us on the day after publication; and if the place gets too quiet, or if one has not enough to do, we can get into Paris, and

crossing the streets gives some people a very serious occupation. In London the timid walkers find policemen to help them, in Paris there are none visible; in London the vehicles travel by rule of road, here they seem to travel in all directions; the streets are broad, and not even Lord Dundreary could understand the thing.

A good deal is said as to the economy of the French, but they are beaten by the Italians. It is usual in both countries to throw the refuse of the house into the streets; in Italy these heaps are ransacked for paper, broken glass, and rags; here all is carried off by street carts, as in London by the dust carts, and possibly the refuse yards are picked over; in Italy we see it done, here we do not.

There seem to be several English families residing here; the terrace is a delightful place for children—clean, cool, and shady. I hear nothing of doctors, though a travelling gentleman shook our passage with his coughing for some nights. Fruit has been and is plentiful, grapes are coming in, too; as the season is late in England, so it is here; but St. Germain-en-Laye is a pretty place, delightful to those who are content to breathe the pure air of heaven, to smell the flowers of the garden, and to walk in the shade of the terrace or the forest; it is easy to get at and easy to leave. As in other places on the Continent it is well to make your bargain for all things.

H. P. M.

M. UJFALVY'S TRAVELS IN CENTRAL ASIA.

M. UJFALVY, whose recent travels in Central Asia have already been noticed in our columns, has furnished some interesting notes on the subject of hunting in the regions he has visited. He observes that his researches were mainly ethnological, but that hunting is so interwoven with the daily life of the inhabitants of Central Asia, and plays so important a part therein, that it is worthy of attention even from a scientific point of view. Many hunt as a means of subsistence, and are trained to the occupation from childhood, while the nomads hunt as well for the purpose of protecting their flocks from the ravages of wild animals as of supplementing their food-supply during years of bad pasturage. The hunters of Central Asia are thus divided into mountaineers and pastoral tribes: the inhabitants of towns are too much engrossed in their commercial pursuits to have any leisure for the chase, and, in fact, have no taste at all for it. The chief hunters are the Kirghiz, who frequent the immense plains between the sea of Aral and Lake Balkash, and the rude highlanders dwelling on the confines of the Pamir plateau. The tracts adjoining the banks of the Syr Daria or Jaxartes are favourable grounds for the hunter, as wolves, foxes, badgers, wild goats, and grey hares are to be found; the bushes alongside of the river are frequented by pheasants; water-fowl of various kinds haunt the river itself, and sometimes tigers are found lurking in the reeds. The borders of Lakes Aral and Balkash afford scope for the sportsman, while the province of Ferghana is compared by M. Ujfalvy to an English park, where stags of an unusually fine description, called *Maral* are found, and waterfowl are to be seen in profusion. The banks of the Kara-Daria, an affluent of the Syr, abound in herons, cranes, ibises, geese, wild ducks and with a bird not unlike a flamingo. On the road one meets with crows and a bird like a blackbird, but of bright blue hue, a colour which M. Ujfalvy observes seems to pervade everything one comes across or sees—the sky, the birds, the stones and the very walls of the monuments.

North of Ferghana, the Semirechensk, or seven rivers' province, with the mountainous slopes encircling Lake Issyk-kul are particularly rich in stags (maral), foxes and bears, which lurk in the extensive forests on the northern Tian-Shan, the vegetation and fauna of which often partake of an Alpine character. The Ili basin is also rich in game, and the plains around Borokhudzir covered with thickets are frequented by an elegant gazelle, which is found in herds of five or six and is very tame. The mountains north and south of Kuldja, the grassy valleys of the Tekes, the Kunges and the Kach are inhabited by maral stags, wolves, foxes, bears, wild goats and all sorts of waterfowl.

The Zarafshan valley east of Samarkand has also many attractions for the hunter. Besides wolves and foxes, lynxes abound, and are much sought after for their furs, while eagles and vultures of a large size are commonly to be seen.

Turning to the hunters themselves, we find that the Kirghiz nomad is *the* hunter, *par excellence*, and his habits of life are identical with what they were when pictured by the envoys of Saint Louis of France. He is of medium height and vigorous frame, his eyes set obliquely in his head; he has a snub nose, a large mouth, with beautiful teeth, and passes his existence in a felt tent, shaped like a cheese, with his wives, children, horses, and cattle. In a tent close to the Sea of Aral, M. Ujfalvy found a young camel, a goat, and several sheep living most contentedly in company with the owner and his family. The chief weapon of the Kirghiz is a small-bore matchlock, which is usually rested on a fork so as to ensure a steady aim. An arquebusier of the time of Francis I. would have certainly despised such a weapon. Yet, with this primitive affair the Kirghiz shoot birds on the wing, hares, wild goats, and tigers, of which last M. Ujfalvy was shown a splendid stuffed specimen in the residence of General Kaufmann, the animal having been shot by a Kirghiz, by a bullet lodged between the eyes.

The Central Asian horses are of three sorts; the *argamak*, or Turkoman horse, a horse of Arab breed, but rather longer and longer legged than the pure Arab. It is believed to have some English blood in its veins. It is scarce and dear, and found only in the possession of the Kirghiz chiefs. The indigenous Kirghiz horse is small and mean in appearance, but, like its owner, capable of enduring considerable fatigue. The *karabair* is the result of crossing the two breeds; it is less hardy than the Kirghiz horse. This latter animal covers 80 kilometres in a day; it is never put under shelter at night, it picks up what it can find to eat alike during the extremes of winter and summer.

The Kirghiz dog, or *tazi*, is a species of greyhound of medium size with pendant ears; it is intelligent, bold and remarkably swift of foot. Those of Samarkand are small but shapely; those among the Kirghiz of the Emba near the Caspian have very long hair on

their ears and legs, while those of southern Siberia are long legged and very active. Grey is the most esteemed colour for the tazis, and a good tazi often fetches more than a horse. This dog has never as yet been acclimatised in Russia in Europe, but Mr. Ujfalvy has been fortunate to bring home three of them, which are doing well on the Jardin d'Acclimatation. In the Upper Zarafshan valley, and near the Pamir, the dog is called gurdja. In these tracts there are no roads or means of communication beyond narrow paths and rickety bridges. The highlanders who inhabit these valleys are called Galtcha. They are an Aryan race, and probably descended from our ancestors, who are supposed to have dwelt in these valleys in remote ages. They are fond of their country, are excellent pedestrians, sure footed and keen sighted. Their hunting companion is the gurdja, a species of basset with pointed ears. This dog is both strong and intelligent, readily ascends the mountains over snow and ice. It is savage and difficult to tame, and when brought to Samarkand always takes advantage of the first opportunity to escape to its native mountains.

The Kirghiz make use of eagles and falcons with which to hunt wild geese and ducks. The Kirghiz of western Siberia train their falcons and eagles themselves, while those on the banks of the Aral buy their birds ready trained from the Bachkirs, half-nomad, half-sedentary people, who since the time of Herodotus have inhabited the valleys of the Ural Mountains. The Kirghiz goes a-hunting on horseback, armed with his matchlock, a whip with wire woven into the lash, a falcon on his wrist, and a tazi following him. Pheasants, which are exceedingly numerous along the banks of the Syr Daria, are usually caught in snares. The wolf is pursued by the Kirghiz on horseback, who attacks him with his whip and usually kills him without difficulty, the animal being (in the Aralo-Caspian basin at least) a most cowardly beast. M. Ujfalvy adds that the Central Asian wolf is usually of a yellowish grey colour, small in size, and afraid of man whom he never attacks. The tiger, on the other hand, he states is larger than that of India (!) and particularly fierce. At the time of the first Russian expedition, more than twenty years ago, the thick vegetation on the marshes swarmed with them; along the banks of the Chu river they are not infrequent, and it is stated that they are found on the shores of Lake Balkash. They are, however, much rarer than they were; and Prince Dolgoruki, who was sent to Turkestan in 1876 to inspect the Central Asian forces, was unable to find one. Tigers are caught by the Kirghiz in pit-falls, with a sheep for a bait. The Russian authorities give a reward of ten roubles (about 1*l.*) for every tiger killed, and the skin usually sells for double that sum. General Kaufmann relates to M. Ujfalvy a story of a Kirghiz having lain in wait for a tiger, which had been committing depredations on his flock, and had even killed some armed men, and having actually killed the beast, with nothing but an axe in his hand. M. Ujfalvy concludes by strongly recommending Central Asia as most eligible hunting ground for sportsmen, and he adds that the security of property and life in the parts subject to the Russians is an additional consideration of importance. Like the late M. Fedchenko, M. Ujfalvy was accompanied in all his excursions by his wife, who traversed over 8000 kilometres in the course of their travels in these regions.

A subsequent paper by M. Ujfalvy enters more particularly into ethnological information on Central Asia. The Galtchas are a people which he specially noted. These are usually confounded with the Tajiks, but though the former, as well as the inhabitants of Karateghin, Darwaz, Shignan, &c., are of Aryan origin, there are points of difference between the two, the Galtchas intermarrying only with themselves, while the Tajiks do not object to ally themselves to Uzbeg and even Kirghiz women. They are hyperbrachicephalic, rather tall in stature, their skin is white, but often bronzed where exposed to the sun, hair dark chestnut, occasionally red and often fair, beard flowing, eyes close-set in the head, brown and often blue in colour. The nose is well shaped and slightly arched, the face oval, the frame vigorous, and they are excellent pedestrians and horsemen, being capable of enduring great fatigue. The Galtchas say that their name signifies "The hungry raven which repairs to the mountains to find means of subsistence." They all speak dialects of Persian, they are of sedentary and agricultural tastes, and their constitution is democratic, the popular assemblage being the supreme authority. Every village has an *aksakal* or white beard, a sort of mayor. As a rule the Galtchas are monogamists, although some of those who are better off have two wives.

M. Ujfalvy contributes a variety of notes on the other ethnological types which he came across in Ferghana, Kuldja, and other districts of Russian Turkestan, and descriptions of the places he visited, which supplement the writings of Fedchenko in many interesting particulars.

A SICILIAN TOUR.—PALERMO.

MORE than two hours had crept by since the one positively fixed for the departure of the Calabrese steamer for Palermo, and, sooth to say, the steamboat officials were guiltless of the delay. The steam had been blowing off long since, the steward had long ago taken his post on the top step of the gangway, ready, as is the wont of his kind, to clutch from passengers' hands their tickets and give them thereafter beds—or not, as the case may be—the foredeck was piled bridge high with furniture so rickety and wretched that it was difficult to imagine how it could possibly pay for, or survive its journey; the afterdeck overflowed with passengers looking as though they owned the furniture; we were ready to move altogether, yet moved not at all. At length some stir was visible among the crowd of red-capped spectators who proposed to witness our departure. Their brown limbs which had hitherto clung to the rough stones of the quay, like the *tentacula* of the polypi a few feet below them, were gathered up lazily as a grey-haired, gold-laced general stepped on board, and close behind, under the form of a quiet portly gentleman in plain clothes, but with the gaudy velvet waistcoat dear to Italians, even in glowing spring weather, came the awful avatar of the paternal police of Naples. Great exertions were now made to get into line a large body of recruits from the Abruzzi, in

order to their inspection, not by the general however, but by the policeman. The looped and windowed raggedness of this corps was rendered yet more striking by that love of cheap decoration which never deserts the Italian. Triple ranges of black velvet vandykes, bordered grey jackets sadly threadbare, yellow worsted braid guarded hose, which, like those of Poins, were once of some recognizable colour, now long since harmonised into a neutral tint. Of their linen an accurate account can be rendered, it was exactly one shirt and a half less than the amount possessed by Captain Falstaff's company. But strangest, most mysterious of all, were their hats. Hats they were fairly presumable to be, as each man bore on his head a piece of felt somewhat conical in form, a hat in the abstract, but so far removed from any ordinary head-gear that one might conjecture the wearers to be Lear's troop of horse, each man providently equipped with the felt necessary for the execution of the old king's delicate stratagem. At length when each individual of the recruits, passengers and crew had separately answered to his name and been checked off, the fat police officer left us free to get under way. We soon left behind the emblematic Vesuvius, growling ominously and so undermined as to its upper portion, that careful observers predict the downfall of the crown on the next outbreak; and after a passing glance at lovely Sorrento, the very loveliest of whose lanes has been sophisticated by the intrusion of two huge royal villas, we found ourselves at sunset rounding the precipices of Ana Capri. Morning showed us Urtica on the beam, and by half-past ten, greatly to the delight of the sea-sick general in the large cabin, and of his small army who had begun service by a night's drenching on deck, utterly unprotected, we hove to in the roadstead of Palermo. Though devoid of any great commercial adaptability, for it possesses neither a navigable river nor a good harbour, this city is so royally beautiful that none can wonder at its having been in all ages the golden apple of discord to many and various races. Here Greek battled with Carthaginian, Carthaginian yielded sullenly and step by step to the steadily-advancing Roman, till at length Hamilcar Barca, willing to wound and yet afraid to strike, clung for three whole years to the rocky fastness of Monte Pellegrino, unable to face the foe in open field, yet gazing like an earlier Boabdil on the *fair city* which he was doomed never to re-enter. No wonder when so great a prize was at stake that the Saracens offered a line of defence formidable enough to daunt even the daring Roger de Hauteville, nor until cheered by supernatural aid—for St. George in full armour bore his red cross banner into the enemy's lines—did Count Roger likewise charge the infidel's home, and, despite his chain mail, cleave to the teeth the Paynim Emir. Not even then had Roger gained the full meed of victory: his brother, Robert the Wily, considering probably that the fortune of the day was due no less to his auxiliary battalions than to sweet St. George's aid, generously presented to Roger all the rest of the island (most of which was not yet unconquered), but retained for his own guerdon the much-coveted Palermo. Not until thirteen years had gone by, years of hard fighting by sea and land, did the great Count at length hold his court in the Alcazar of Palermo, and might recall with just pride the time when, twenty years before, he had cut his way with only a hundred men from Messina to Girgenti, or when he and his Countess, shut up by mutinous Greeks in the citadel of Traina, had borne the sharp winter with no covering for their bed save his knightly war cloak. The difficulties of entering Palermo have by no means ceased at this day, and while awaiting the slow process of getting leave to land the traveller may, if so minded, speculate as to whether this worthy prince, who ruled a motley race of Greeks, Saracens, and Normans respectively by the laws of Justininian, Mahommed, and Rollo, bade his officers look askance at any bearded stranger, and ask whether he was known to any person of respectability in the island. The happy forethought of a friend had enabled us to reply with well-studied carelessness that we have letters from the English Embassy to the Viceroy. This "large utterance" produced a satisfactory change of demeanour; our portmanteaus were released after a very slight examination, and ourselves made free to cross the harbour to our hotel; for the police and Customs' offices are with official ingenuity situated on the side of the port farthest removed from any centre whether of business or pleasure. When after a tedious passage over the glassy surface, which the boatman tried hard to persuade us was becoming wrinkled by wind—so as to avoid pulling—we landed, another Customs' officer asserted his right to a fresh examination of our boxes. This felony duly compounded, we were able to walk some twenty yards to the city gate. Physically this gate may be considered non-existent, there being no barrier, nor even an arch to connect its piers. I well remember a party once seeking its imaginary shelter during an April shower, and staying for some minutes firmly believing that we were not getting wet. The legal existence of the gate was however fully manifested to our present quartet, when—*uno avulso non deficit alter*—a third executive appeared, and asserted the city's privilege to investigate our baggage. This time the thing was too ludicrous, we burst into universal laughter, and the old fellow, probably puzzled by so unusual a protest against his claim, yielded the point. *Risu solvuntur tabulæ.*

After due renovation of the inner and outer man at the Trinacria, a very good hotel, and—as subsequent experience taught us—the only good one in the whole island, we devoted ourselves seriously to the duty of sight-seeing. The plan of the city is simple and grand. The main street of Cassaro runs in a perfectly straight line from the sea-shore to the foot of the hills which, gradually rising into mountains, girdle the city with a picturesque chain of summits. The upper gate of the town is however more complete than its sea congener, having over the arch a pavilion of the Royal Palace, the Moorish Al Cazar, which gives its name to the street. About halfway up, the Cassaro is intersected by an equally long street, and the four façades of the point of meeting are symmetrically curved, and decorated with what Richie Moniplies terms the policy of bigging. The University Museum contains a gallery of painfully bad pictures, simpering saints and grim executioners to any amount. Lo Spasimo di Sicilia has now a different meaning to what it once bore. A good bronze from Herculaneum representing Hercules, the patron saint of that city, capturing the stag of

Diana, is the only object worthy notice in the upper rooms. Below, however, the case is different. A Pompeian mosaic of two old men is striking, from the life-like and appropriate expression given to the monstrous comic masks in which, as usual, the actors' faces are hidden. So vividly are the prevailing feelings of Menalias and Chremes here delineated, that it is impossible to doubt that we look upon the first scene of the Heautontimorumenos. If, therefore, we can divest ourselves of the intrusively-ludicrous associations of Christmas pantomime, it becomes comprehensible that the mask may have been a useful adjunct to the ancient stage, where indeed the dimensions of the theatre often rendered some gigantic medium absolutely necessary. But it is obvious that the expression must have been confined to some overruling passion, some characteristic "humour" which was the keynote to the whole personation. Bobadil, Morose, or Epicure Mammon, might be tolerably represented; Macbeth or Shylock would defy the skill of the modeller. Some fragments of the *cella* of a Selinuntian temple, bright with scarlet and blue, might convince the antichromists of the Grecian practice in architectural decoration, did they care to be convinced, which I much doubt. But by far the most interesting relics bequeathed to us by Selinuntium are the sculptured metopes of her temples. Hercules carrying two thieves by their heels is a strangely archaic affair, Egyptian in some particulars, but so rudely proportioned that the demigod might almost do duty for a South Sea idol. Perseus is very similar in type, at best he can take rank merely with the Hindoo deities, while the goggle-eyed mask of Gorgon looks to have been carved in Mexico. But on the opposite side of the small courtyard are works of a later date, though still of early time in art history (the city was destroyed 409 B.C.), which display merit of a very high order. Pallas combating is a grand ruin, of which unfortunately little more than the general masses of drapery and attitude can be traced, the sea air having eaten away nearly the whole surface. The same remark to some extent applies to the Actæon torn by his dogs; his position is marvellously energetic, as with his right hand he beats down one dog, at the same time throttling another which he holds in his left, clear of the ground. In all these sculptures the material is a coarse limestone, but the faces, hands, and exquisitely-moulded feet of the female figures, being all which is visible beneath the decorous drapery, are of fine white marble. This method of producing an effect of greater delicacy would probably, did not chronology stand awkwardly in the way, have been ascribed rather to the decadence than to the infancy of art. Polychromy has also been employed, for the girdles of Perseus and Hercules bear traces of deep red paint.

Not far from the University stands a building to which a painful interest attaches itself, it was in 1849 the Parliament House of the Sicilian Republic. In that year the present writer had been a human unit in the noble squadron which under Admirals Baudin and Parker was sent from Naples to communicate the King's *ultimatum*, namely, that he refused all concession, and to express our good wishes that the Sicilians might get out of the difficulty into which they had been led by a foolish reliance on our word. Stately and ceremoniously was our manner of delivering this far from honourable message; salutes from the admirals to each other, joint salutes to the Sicilian flag which we had in effect come to pull down, national airs from the ships' bands, all these "fierce vanities" could not blind our eyes to the undignified nature of our position. Distasteful as our presence must have been to them, the Sicilians showed us personally much high-bred courtesy, nor even among the poorer classes was anything of rudeness displayed. The sole exception that I can call to mind was when a wild mountaineer, who had come from the Piazzo de Greci to work at the fortifications, hustled one of our officers. The offender was immediately seized by the bystanders and severely reprimanded, while an ample apology was tendered to the fiery little Cymrian, even before he had time to knock down the Greek. The Sicilian Government determined to send the royal message to each municipality, desiring from each a separate answer. During the time necessarily occupied by this proceeding, our squadron remained at anchor, and at length the 'Bulldog' arrived from Naples, bringing the British and French Ambassadors, whose presence, it was supposed, might induce the Sicilians to submit apparently on the principle on which the governess or mamma is called when nurse has failed to get the rhubarb swallowed. More gunpowder and manning of yards followed, and at length came the moment when the Speaker had to announce to the Deputies that the message brought by the Ambassadors was identical with that previously communicated by the Admirals. The House unanimously voted that the message should not be read, and proceeded to listen to the replies which the various communities of the island had returned. These, though unanimous as to refusal, differed considerably in style. Some were brief, explicit, and dignified; others (and these, alas, the majority) were full of bombast circumstance, and even of puns, which, though most offensive to our taste, were not unwelcomed by the House. But as Cicero has told us that the Sicilians can never be so badly off but that they can make some appropriate joke on the subject, it is needless to subject their actions to our canons of criticism. Finally, on the question being put, the whole House rose simultaneously, and accepted the alternative of war, with outstretched hands and shouts of "*Guerra, guerra!*" The sight was grand, but the question "*Quid dignum feret tanto hic promissor hiatu?*" would intrude itself unpleasantly, and received a painful answer some months later.

A novel feature in the Cassaro cannot fail to attract the stranger's eye: along the upper storey of a house often runs a gallery whose curved projecting outline is unmistakeably of the eighteenth century, closely latticed and gaily painted, a fantastic commingling of the lively and severe, intended doubtless to symbolise the very problematical fact that nuns fret not in their convent's narrow room—for these are convent lattices. Far up the street, just where these ornamental soul-traps are most frequent, stands the Cathedral, somewhat back from the main street. The building is one of the noblest, perhaps, taken altogether, the noblest specimen of Gothic architecture in Italy—the grand devout Northern idea rendered in all its main features, though somewhat modified by the medium through which it is conveyed. Gothic architecture in perfect purity never crossed the Alps. The carved tracery

round the eastern doorway which faces the street is something marvellous in elaborate intricacy; but we miss the solemn ranges of Saints and Prophets which in Northern cathedrals so fitly herald the approach to the temple of their master. Much of the exterior has suffered from the bad taste of modern repairers, but the belfry still remains in which Stephen of Perche expiated the rarely-forgiven crime of being too wise for his age. He was Chancellor to William the Bad, and a great reformer,—"*Advocatus et non latro: mirabundus populo*," says the Romish hymn in honour of the Cornish saint, Ivo—wherefore the priestly party rose against him, and with "*Nolumus leges Siciliæ mutari*" on their banners, did veritably besiege the obnoxious Chancellor in this belfry till he was fain to capitulate and retreat to France. Passing under the lofty arches which connect this tower with the main building, we enter by the south door and find ourselves in a sadly sophisticated interior, over which a deluge of renaissance and whitewash has swept with desolating effect. High above the doorway, and, of course, facing the high altar, is a remarkable work of art. No Byzantine Madonna, no Holy Rood by Giotto, no Last Supper in fresco is here; but the post of honour and sanctity is filled by a half-length portrait of the gracious Sovereign of the two Sicilies in full uniform. Very full it undoubtedly is, and very forcibly do the tight buckskin inexpressibles and the wide expanse of chin and throat strike on the gazer's eye. In the whole cathedral one chapel alone is really interesting, where, in four sarcophagi of porphyry, repose the ashes of the Norman sovereigns of the island. All are simple in form: that of King Roger (in which however he does not lie) is a plain oblong chest with a steep ridge roof. He had prepared this tomb for himself at Cefalu, but his successor, whether from respect to his remains or disregard of his wishes, buried him here in a white marble sepulchre; and Frederick the Second, the warrior, philosopher, and troubadour, speaker of six languages, founder of public schools, rests in the coffin destined for Roger, beloved by his subjects and duly hated by the Popes, who called him an atheist for allowing his Saracen subjects to live unmolested at Nocera de' Pagani. His wife lies near him, who was, says her epitaph, "The last of the great race of Northmen," for thus and not "Normans," should we translate the good old bad Latin NORTH-MANNORUM.

In the well-proportioned and constructed crypt of the church we find a comfortable collegiate party of canons, deans and archbishops, with a small leaven of princely laity. A few of their tombs are decorated with Alexandrine mosaic, but the high fashionables of the cemetery have taken up their abodes like the hermit-crab in the disused marble sarcophagi of antique Romans whose togaed forms have been ruthlessly beheaded to make room for some shield rich with barbaric blazonry. The central place, however, which is worthily occupied by the builder of the crypt and of most of the south side of the church, offers to our view an unmutilated sepulchre, devoid of all armorial bearings. Walter Ofamilio, succesor to our luckless friend, Stephen of the bell-tower, was likewise a reformer; but, more judicious than Stephen, he contrived to retain the good opinions of the Sicilian people as well of their Norman lords. One thing he lacked, not perhaps essential to his own happiness, but the want of which caused dismay to the souls of seneschals and gentleman ushers. Walter Ofamilio, notwithstanding the good mouthfilling character of his surname, had no family shield; nor could the Garter or Rouge Dragon of those early days—for Walter was an Englishman—help their Sicilian brethren to dispel this annoying cloud. Etymology had not then made much progress, or a small acquaintance with our barbarous island tongue would have solved in no pleasing manner the mystery. Walter Ofamilio was simply the son of a miller; and as he lies there, Dean of Agrigentum, Archbishop of Palermo, and the Minister during whose life, we are told, there was more safety in the thickets of Sicily than in the cities of other kingdoms, the miller's son may well afford to dispense with a herald's voucher for his respectability.

After stopping for a few minutes to look at a Dominican church in the Piazza near the University, a marvel of laborious enormity in inlaid marble, we went on to the curious old church of the Martorana. A modernised choir, rich with carved work and gilded lattices—it is a nun's church—has been joined to what remained of the ancient fabric of the High Admiral. An elaborate pavement of Alexandrine work, sundry pannels of porphyry and green basalt, bright as glass, together with two pictures of early mosaic are the chief features which time and modern decorators have spared. The most interesting of the two pictures represents the coronation of Roger the first king, son of the great Count. The figure of the king is historical for he is robed in the very dalmatic in which many centuries afterwards his bones were found wrapped, but instead of the officiating priest we see a figure of noble though somewhat stiff character floating in air, above whose head is inscribed the Greek monogram of the Saviour. Roger's title is likewise given oddly enough, the language being Latin, the character Greek, thus ΡΟΓΕΡΙΟϹ ΡΗΞ. This, by the way, may serve as one instance—many others may be cited—to show that anciently the Greeks pronounced H like our A in *mane*, not like double E, although the modern Greeks agree with our schools in doing so. In the choir of the small church, which with the transepts forms the whole church, nave and aisles being destroyed, stood the Easter candlestick, which always occupies a conspicuous place in the Romish Church from Easter-Day till Ascension-Day, and bears a massive wax candle pierced with five holes, typical of the body of the crucified Saviour. Here, however, as in other churches in Sicily, it was a sort of rustic candelabrum, bearing seven lamps. Other object of interest was there none, save two comfortable armchairs, in which were seated two portly monks, one all black, the other all white, seriously inclining towards the gilded grates to receive the confession of unseen penitents.

Three of our party now leaving their comrade sketching in the Martorana, departed in search of the church from which in 1282 was rung the peal heralding the awful Sicilian vespers. Our search was unsuccessful, and no wonder, since, ignorant of the changes of soil, we were questing on ground which down to the fourteenth century was covered by the sea, whose waves then reached nearly to the cathedral. Meanwhile to the remaining man who was copying the mosaic of King Roger, there

offered itself a brief vision of romance, a Paris peep into Paradise, closed, alack, as soon as opened! For as he looked upon the old mosaic, dropped from the lattice overhead—there were two tiers of gilt cages and rolled along the porphyry pavement, a small scroll of paper. For none save him could the billet be intended, seeing he was alone in the church. Who shall say what visions rushed through his mind? but ere he could disencumber himself of portfolio and seize the prize, there emerged from a side door the impoetic form of a working carpenter, who quietly impounded the mysterious missive and vanished with his prize. What was the Sibylline leaf? was it a passion flower, which, like that of Catullus, had bloomed in the secret convent garden? was it the man's own paper of measurements? No farther seek its merits to disclose, but turn rather to enjoy the glorious sea view, which as you gaze from the windows of the Trinacria fills the mind with the rare sense of perfection. The hills behind Bagaria on the extreme right sink gradually to the sea in a series of picturesque curves; on the left rises in bold precipices above the city the Monte Pellegrino.

> "Where darling of each heart and eye
> From all the youth of Sicily,
> Saint Rosalie retired to God."

In front the many-coloured sunset waves of the Mediterranean are lapping gently against the parapet of the Marina, the most beautiful public promenade in Europe. The massive breakwater in front shows, however, that the scene is not always peaceful as now: when the N.W. wind—the fierce mistral—sweeps down from the Alps, and, ranging along the whole coast of Italy, dashes the waves against the Sicilian shore, the surf often inundates the whole broad road, and drenches the orange and pomegranate gardens which extend from it to the palaces on the land side. During our stay in 1849 the cutter of the French Admiral was dashed to pieces and two men drowned in one of these gales, and on a previous visit our ship, a powerful steamer, arrived but just in time to bring off a ship of the line, who, becalmed during a fierce Scirocco under the sheer limestone wall of Monte Pellegrino, was rolling her maindeck ports under water. These recollections prevent one from considering the scene too sybaritic. Statues, marble seats, and a handsome orchestra in the centre of the drive, all show that this place was meant for enjoyment; but a royal decree to enforce gaiety would be as impotent in Sicily as at the court of Seged. The Marina is nowadays utterly desolate. Its last stage of life was in 1849 when the Sicilians dug a huge trench at the farther end, ostensibly to repel the possible advance of the royal troops. The number of cubic feet reported in the evening papers as excavated by patriotic energy put to shame mere railway navigators; but when we visited the spot the lion was by no means so big as the picture. The men worked frantically for about ten minutes, then came fraternal demonstrations, female labourers, whose utility may be estimated from the fact that they were invariably preceded by ten or a dozen enthusiasts, shouting "*evviva* something or other" and waving their cigars, but by no means helping their tottering sisters. The only men who really wrought well were a party of Capuchins from the neighbourhing convent of the Nome di Gesu, and when at the Ave Maria all left off work, the cowled, corded and bearded fathers thought no shame to brandish high their shovel and join the Pyrrhic dance which, inspired by military music, men and women struck up. Well might the old French Admiral shake his benevolent head, and remark "I have seen men fight in many parts of the world, and if these men mean fighting I do not understand them."

C. C. B.

AUGUSTUS PETERMANN.

WE regret to have to announce the sudden death of Dr. Petermann, which took place at Gotha on the 25th of September 1878. That eminent geographer was born at Bleicherode in Prussia on the 18th of April 1822, and studied geography under Berghaus at Potsdam. In 1845 he came to Edinburgh to assist in the preparation of the English edition of the Physical Atlas of Berghaus, published by Keith Johnston. He was in Scotland for two years, and from 1847 to 1854 he was settled in London. During that period he assisted in the publication of several valuable maps, among which were the very ably-designed hydrographical and population maps of the British Islands.

In 1855 Dr. Petermann returned to Germany and took the management of the geographical institute of Justus Perthes at Gotha, including the editorship of the *Mittheilungen*. From that time until the day of his death his life has been one of ceaseless activity in furthering the interest of geography, and for more than twenty years he has continued to issue a series of excellent maps and to publish valuable geographical information from all parts of the world. As Sir Roderick Murchison said, in 1868—"the *Mittheilungen* has aided the diffusion of a taste for scientific geography throughout all civilised countries." In addition to this, Dr. Petermann was distinguished for the zeal he displayed in promoting the researches of travellers in distant lands, and for the hearty manner in which he always appealed to the public for aid to enable them to carry out their plans. With his own means, and at his own risk, he sent a small Norwegian yacht to the east coast of Greenland, and to him the despatch of Koldewey's two German Arctic Expeditions was mainly due. He also aided the African travellers Gerhard Rohlfs and Karl Mauch, as well as many others, with advice and powerful advocacy. He was an Honorary Corresponding Member of the Royal Geographical Society, and received the Founder's Gold Medal on May 25th 1868.

Dr. Ernest Behm, who has been his coadjutor for many years, will succeed Dr. Petermann as Editor of the *Mittheilungen*.

MESSRS. A. HARTLEBEN, of Vienna, announce the appearance on the 1st October of a monthly journal entitled *Deutsche Rundshau für Geographie und Statistik*, and devoted to geographical statistical and kindred subjects. The work is illustrated with plates and maps.

AN ANTHROPOLOGICAL EXHIBITION will be held in Moscow during the ensuing year, and a great number of objects will be sent from Samarkand, some illustrative of the history of the old Baktrian kingdom, antiquities dating from that epoch having been recently unearthed in the city.

Reviews.

—:o:—

INDIA AND HER NEIGHBOURS.*

THE author of this book advocates the Euphrates Valley Railway scheme, and appears to consider that, to do so successfully, he must plunge into what he calls history—"a series of dramatic incidents," and "word pictures." He is quite right in advocating that Railway scheme, but it is a great pity he did not keep on his own rails, and not have run off the line altogether in attempting historical feats, and thus lay himself open to adverse criticism.

Here is a bulky 8vo volume of over 400 pages, the contents of three-fourths of which contain nothing but padding (even the old map of India is familiar to us), and such as may be found in the dozens of trashy Gazetteers, and Students' Manuals of Indian History, so called, but not a scrap of anything new, except in the shape of new errors.

The Euphrates Valley Railway comes in for a very small share of the writer's attentions, but we have the "Khyber" and the "Bolan," as usual, in very prominent print, the mania with which many persons are still afflicted being that the Khaibar route from Kábul, and the Bolán route from Kandahár, are the only "two gates of India," as the author styles them, and the sole and only routes by which India can be entered and assailed from without, or by which traders can enter it; and that by these two routes alone can troops be sent into Afghánistán or farther into Central Asia, or caravans of merchants leave it, and if we only secure them we are quite safe. Woeful delusion, as we may find to our cost, if we do not take care!

Mr. Andrew's *forte* is certainly not history. In the very preface we have a specimen :—

> "The Seikh and the Gourka [Sikh and Gúrkha, probably], the fiercest soldiers of Asia [with some exceptions he might have added] vie in ardour with the Musulman, who burns to avenge the head of his faith. Even the Hindostani, forgetting his caste restraints and prejudices, longs to strike a blow for those whose salt he and his fathers have eaten, etc."

From this we are to understand that there are no Musalmáns to be found among Hindústánís, seeing that the term applies to natives of India generally, and the writer would lead us to believe that the term "Hindostani" refers to Hindús only. It may be so with him, but not with those who know to the contrary.

He adds—"There never was put forward a greater fallacy or error more likely to be mischievous than that the Turkish question was of no importance in an Indian point of view." Here I can heartily agree with Mr. Andrew; and in no publication was the stupid one-sided fallacy upheld with greater obstinacy (as though Hindús were the only people worth caring for in India, and as though such Hindú miscreants as the Náná, Tántia Topí, and many others, had never existed) than in a certain journal devoted to Indian subjects, until within the last month or two, when Cyprus became the theme, and then it turned its coat.

Among some of the ethnological discoveries of the author may be mentioned (p. 22) that "a kindred race to the Hindoos are the Parsees" (I foolishly thought they were a kindred race to the Persians), and that the Patans or Afghans (in another place we are told that Patans are only "*half-caste*" *Afghans*) only "inhabit *the Punjab frontier*, part of Rohil-kund, and much of Hyderabad." There are then none in their own country west of the "Panjáb frontier," we suppose, none in Bengal, none in Káthiawár, none in Southern India, and, indeed, none scattered every here and there, in greater or lesser numbers, over the peninsula of India?

We learn from Mr. Andrew, and for the first time, that "the Sunee" is the Turkish form of "Islam." Did the Turks introduce it, and was it unknown before their advent? The Persians, too, after the same fashion, are not of the "Shea" sect, they are only "like" them, and, among other things, "pay special homage to Hassein and Hossan." This, probably, is the "popular way" of writing Hasan and Husain—other Shí'ahs do not reverence them perhaps.

We are told also, that among the "Hindoo" titles, by which "a Mahomedan may be known from a Hindoo," are "Thákúre and Sirdár," which "answer to our Barons." So "Sirdár," is a Hindú title, is it? and a Muhammadan who is styled "Thákúre" may be known from a Hindú, may he? Can Mr. Andrew give us the names of any Muhammadan who bore the title of "Thákúre?"

Here is a specimen of the sort of history Mr. Andrew deals with in his "word pictures":—

> "Sabuctugi, the father of Mahmoud, from a slave had risen to sovereignty, and at the time of his death Mahmoud was absent in Khorassan. His brother Ismael *seized* the empire, and attempted by bribery and corruption to secure his position on the usurped throne. Mahmoud first tried persuasion upon his *treacherous* brother, but soon had to reconquer his crown and capital at the point of the sword, and was clemently satisfied to confine his mischievous relative for life in the luxurious (?) fortress of Georghan."

Why, even Dow, with all his extravagant blunders, says that his father, Sabuk-Tigín, *nominated* Ismā'il as his successor, and that Mahmúd offered to leave him in possession of half the empire; and he was confined as a state prisoner in *a* fortress of Jawzján. Where might "the luxurious fortress of Georghan" have been situated? Ismā'il reigned two years at Ghazní.

Again (p. 39), "Ghuzni, built upon a rock 300 feet above the surrounding plains, soon became a city of groves, temples, and palaces, the beauty of which was unequalled in Asia."

The writer from whom Mr. Andrew takes this evidently did not know that the "rock" in question is no rock at all, but only the western extremity of a range of hills of slight elevation, commanded by others much more lofty. The site on which Ghazní stands contains no space for even one "grove," and Musalmáns do not build "temples." The citadel in Mahmúd's time stood nearly in the middle of the city, through which the river flowed; the two remarkable minárs, one erected by himself, the other by his valiant son and successor, stood at two corners of the great masjid, and the Rauzah Bágh or garden, in which Mahmúd was buried, and on the site of which his tomb still stands, adjoined the city itself. So it must have been a large rock indeed to have contained so large a city.

* *India and Her Neighbours.* By W. P. Andrew (Allen and Co.)

At page 42 we are told that "Mahmoud left two sons . . ., the youngest, Mahommed, usurped the elder *Musuad's* throne. . . . . Five years later, the blind Mahommed, restored to liberty and sovereign power, returned with interest the treatment he had received. He degraded and imprisoned *Musuad* and raised his own son to the throne. This prince, Ahmad I., at once slew his uncle, *Musuad*. . . . . Modoad did not hesitate to avenge his father's murder. . . . . His brother, Musdoad, now made war against him."

Here we have a perfect nest of errors. Mahmúd left, not two sons, but *seven*, and Muhammad was not the youngest, but the second son. "The blind Mahommed" was not restored to liberty five years later, for Mas'úd (there is no such name as *Musuad*) reigned a few days over eleven years, from 422 H. to 432 H. Neither did the "blind Mahommed" raise his own son to the throne, and there never was an "Ahmad I." among the sovereigns of Ghazní, nor will such a name be found in any list of them, not even in Dow's. Ahmad, son of Muhammad, did not "at once" slay his uncle, for Mas'úd was not murdered till the following year—433 H. There is no such name as *Modoad* to be found, save in the histories of Dow and Briggs, and their copyists. The name of Mas'úd's son, who avenged his father, and succeeded to the throne, was Maudúd, and his brother "Musdoad" did not make war upon his brother, because he had no brother called by such an impossible name. Maudúd had *eight* brothers, and one was called Majdúd. All these names have meanings.

I may also mention for Mr. Andrew's information that there are no such names (p. 43) as "Resehed," "Feroch," "Chusero," "Arsilla" and "Yaas King of Ghor," in Indian or Asiatic history; and (p. 47) "from 1321-1387 endless Afghan rulers" did not sit "on the throne of Hindústán," and, farther, that *not one* of those quoted by him was an Afghán: they were all Turks.

Such utter nonsense as this is only to be found in Dow and Briggs, and histories of that type. The *first* Afghán ruler who sat upon the throne of Dihlí was Bahlúl, the Lúdí, and that event did not happen until the middle of the following century.

Again (p. 44) "Mahomed (*sic*) of Ghor," who, a line or two farther on, is called "Mahomed Ghor," was not an Afghán, he was a Tájik. Such assertions about "Afghan" and "Patan dynasties of Ghor," came first from Dow, was improved upon by Briggs, and followed by their copyists, but did not come from Firishtah, as was pretended.

We hear a deal now about Afghán dynasties of "Ghor," and Afgháns "settled in Ghor," "Afghans proper," and the like; and it is time such errors should be shown in their proper light and corrected.

Readers and writers of Indian history—even Mr. Talboys Wheeler—will find to their great surprise that, according to Mr. Andrew's discoveries, India was conquered by the "Mogul"; that "the Mogul age had fallen on India," as early as 1227, and then he quotes "Sullivan:" that Genghis Khan (when Mr. Andrew comes to "Deccan" history, and copies Meadows Taylor, he spells Khán—*Kahn*—according to the Taylorean system) *reigned* in India; and that *he was succeeded* by Feroze, and he in his turn by his sister the beautiful Sultana Rizia.

The Chingiz Khán never reigned for a single hour in India, and more than that, he never passed to the east side of the Indus, and was never in India in his life. There never was a "Sultana Rizia." The female sovereign who ruled at Dihlí, and respecting whom so much absurdity has been written by the writers above referred to, but not by Firishtah, was styled "Sultán," which is applied as signifying a sovereign without reference to sex, and her title was Raziyyat-ud-Dín: her name has not transpired.

A "Mogul"—as the author styles a Mughal—and a "Tartar" are all one to him; and, among other statements, called "word pictures," are (p. 323) the following:—

"The terrible Tartar Chingiz [it was Genghis before] carried his iron sway over greater part [only?] of Central Asia," and then we are told that "his famous *grandson* Tamerlane [Timur the Lame] ruled over a wide dominion from his splendid capital *of* Samarcand [it is "Samárkhand," in other places] *in* Bokhara."

So "Tamerlane," as he styles Tímúr-i-Lang, was Chingiz, *grandson*, was he? For such brilliant discoveries as the foregoing, and such truly "dramatic incidents," the author deserves, at the very least, the star of the C.S.I.

These are a few specimens only of the "*acts of heroism and chivalry that may vie with anything in the Chronicles of Monstrelet and Froissart*" according to one oracle, whose knowledge of Indian history is about on a par with Mr. Andrew's; and, according to another oracle of the same calibre, these are some of "*the salient points of Indian history*," which the author "*presents in a picturesque and graphic form.*" This is how tweedle-dum answers tweedle-dee—the blind leading the blind—but the unfortunate *public* is not aware how far such darkness extends.

At page 48 (as yet I have not gone over one-eighth of the book, and how many scores of errors have been passed over in these few pages even!) we are told that when "Timour triumphed over Bajazet [this is "the popular way" of writing Báyazíd], and, glutted with conquest, returned to Samarcand to hold high festival in celebration of the marriages of his six grandsons," the "gardens of the Imperial palace ran with *kermiz*, hippocrene, brandy," &c.

The gardens must have run very *red* indeed then, because kermiz is *cochineal!* Perhaps the author meant *koumis* or fermented mare's milk.

In another place (p. 58) Mr. Andrew tells us that "Nadir Shah"—that "Persian of low origin" [who was not a Persian, however, but an Afshár Turkmán]—"after driving the Afghans out of Persia, followed them into Hindostan. The Emperor Mahomed made a feeble show of resistance, but quickly retired before the victorious arms of the conqueror. In the massacre he ordered at Dehli, the streets ran red with blood," &c.

So the Ghalzi Afghans, driven out of Persia, flew at once to Dihlí, across the whole breadth of Afghánistán and the Panjáb, and the "Emperor Mahomed," who made the "feeble show of resistance," was, of course, their Emperor. Well, I never knew before that the Ghalzí Afgháns driven out of Persia came to Dihlí to be massacred! This is certainly some of the "salient points of Indian history in a picturesque and graphic form."

Again (p. 163), Ahmad Sháh, Abdálí, won a victory

at "Páneeput" by his own sturdy subjects, aided partly by the Afgháns of Hindústán—the Rohilahs—and a few Hindústání troops; and as to the "forces being about equal," while the Afgháns had a few pieces of artillery, light field-guns, the Marhattahs had no less than 200, including heavy guns, besides a superiority in the number of men.

In the same way "Babar" did not "lead his hardy Turks *and Afgháns* from Cábul to the field of Páneeput," but led his hardy Mughals and Turks against the Afghán ruler of the Dihlí kingdom.

By all means let us carry out the Euphrates Valley Railway scheme if it will strengthen our interests—very much weakened lately—or tend to bar the ever-increasing Muskov encroachments, for we must be prepared any day to find Marw and Balkh seized by the perfidious race, whose statesmen's promises are not worth a straw. They have already made a move southwards towards the banks of the Oxus, to "ameliorate" Balkh, as a counterstroke to the Cyprus move. We shall soon see what a "neutral zone" means in Russian, and we may prepare for "Bulgaricks" all along our frontiers: indeed the Russians have already begun to speak with "a sisterly voice" at Kábul; and they will bear "the torch of freedom" to Káshghar too, if they can do so without a war with the Chinese.*

I am one among the number of foolish people who, perhaps, consider that it is better to form a strong barrier in front of our friends' house in order to keep out a thief lying in wait in that direction, and to prevent his occupying the strongest rooms in front preparatory to *looting* it, than to content ourselves by seizing upon an outhouse in the rear. The occupation of Batoum and Kárs by British troops *would* prove a barrier against the Russians, but now they have been "Shuffel-offed" to them, to be used as levers against the Turks and the Persians as well as ourselves. Cyprus, occupied by two regiments of infantry, a battery of artillery possibly, and a few Royal Engineers, is, however, not likely to prove a *very strong* barrier against their aggression. When they are next ready to play the game of amelioration, as they have been and are still doing in the Turkish provinces, they will have Batoum to receive their war stores and reinforcements, and Kárs as an almost impregnable base from whence to commence, and may overrun half of Asia Minor before we should be awake to the danger, much less ready to meet it. Of what use will Cyprus and its strong garrison be to prevent that?

We long ago allowed the Muskov—*la'nat ullah 'alaihim!*—to make the Caspian a Russian lake, and now we have furnished them with the means of beginning to work their way westward along the southern shores of the Black Sea, while we have taken up a dignified position in the rear!

Instead of carrying the Euphrates Valley Railway to the Persian Gulf, why not take the bull by the horns at once, and carry the line right across by Isfahán, to Hirát, and by Kandahár, which we can occupy, direct to Multán in the Panjáb, to join our Indian lines of railway? There are no insuperable difficulties in the way: none greater than were overcome in carrying a line over the Ghauts in India and over the Alps in Europe, and the little extra cost would be money well laid out.

H. G. RAVERTY, Major,
Bombay Army (Retired).

* These remarks were written and in type some time before Sher'Alí refused to receive our Mission. I think we should take into some consideration also how his feelings must have been worked upon by the Russians during the invasion and dismemberment of Turkey, our ancient ally.

THE PHYSICAL SYSTEM OF THE UNIVERSE. By *Sidney B. J. Skertchly, F.G.S.* (Daldy, Isbister, & Co.)

THE BEGINNINGS. By the author of *New Pages of Natural History* and other works. (Trübner & Co.)

HERE are two books on the same subject, both starting from the same point, that heat and light were primary causes of the past and present conditions of this sphere; yet no two books could well treat the subject so differently as these, which Mr. Skertchly and Mr. H. P. Malet have now offered to the public. We take them up in the order of publication.

We learn by the Preface of the Physical System "that the earth is an integral part of the universe"—that its present condition is due to past actions—and these depend upon "the action of heat upon solid, liquid and gaseous matter." The Introduction tells us, "The surface of the earth receives heat from internal and external causes" (p. 6, sect. 11). "The heat from the former source is being continually dissipated into space. . . . . The world is a cooling body. We have to read much before we find out how it got hot," and at p. 366 the author was "led by several lines of thought to the conception of a time when the earth was in a molten condition. . . . . Therefore it is no far-fetched idea to suppose that the earth was once in a gaseous condition;" and that the whole solar system was once "in the condition of a nebula." He imagines this nebula "rotating and contracting"; in doing this "the rotating ring would almost certainly break up, and the different parts thus attain a rotation of their own." This is part of the nebular hypothesis of Laplace, but as he did not assign a cause for initial heat in the nebula, Mr. Croll is quoted, to show that "the energy in the form of heat may have been derived from motion in space." These ideas are accepted, and we are told at p. 375 "that in some form or other the nebular hypothesis is almost universally accepted as true." We may observe here that there are many believers in the slow cold aggregation theory of Gruithuisen, that many of our own living writers object to the nebular theory, and that it is so mathematically put together, that if we take away a part we destroy the whole. And, says Mr. Skertchly (p. 369), "As Laplace expounded it, the hypothesis fails to account for much that has since been discovered." This is very true, and it is one of those points calculated on by the sagacious Laplace when he said, that his planetary system would hold proof—"*if foreign observations do not disturb it*" (p. 365, translation by G. J. Pond, 1809.) It seems then that the whole "conception" of the internal heat of the earth is founded on an unproved theory; we can allow volcanoes and hot springs, we can admit that heat must exist in the deposits of the earth, but we deny that Mr. Skertchly has any authority for saying at p. 264 "*The interior of the earth is intensely hot.*"

At p. 285, the earth's external heat is accounted for. "The whole of the heat derived from external sources is practically the gift of the sun." It is not yet known how the sun's heat is maintained; and at p. 273 Mr. Croll is again quoted—"*Are we really under any necessity of assuming that the sun's heat was wholly, or even mainly, derived from the condensation of his mass by gravity.*" Now, according to the theory of Laplace, the planets of our solar system were thrown off by the nebula before the condensation of the

remainder formed the sun; but, says that author (vol. ii. p. 355, *System of the World*) "*This luminary not only acts by its attraction upon all these globes, and compels them to move around him, but imparts to them both light and heat.*" So far we have facts before us, but if the planets are ruled by the sun that body was formed before them. We do not know how he was formed, and Mr. Skertchly fails to explain this primary action of our universal system.

Turning to "The Beginnings," we find that every action or elemental matter is credited to the sun. Our ignorance of the origin of light and matter is allowed, but the Creator is made to say on the frontispiece—

"Go forth, my light! and, from the space around,
Gather the wandering vapours to my care."

Light is thus adopted as the first agent of the Creator to act upon the matter in space for the purpose of bringing it under the law. After pointing out what he supposes to be wilful errors in certain reviews on *Incidents in the Biography of Dust*, a book which seems to have led on to the one under review, the author says (p. xvii)—"When we applied the discovery of Mr. Crooks—that light is force—to this matter, we found at once an undulating power, which must have acted on matter, in the condition supposed to have existed." Then by considering the present condition of the dry land and the water bed, by the natural conditions shown as existing now, and as having existed heretofore, by the geological survey of America, by the results of the spectroscope, and by the liquefaction of gases, "we seem to escape from the impulsive system of Laplace, to adopt the more natural slow aggregation of molecular matter of Gruithuisen, from the supposed nebulous mass floating in space as the only system under which the gases and the liquids could be liberated from their chaotic condition—the only system under which those gases do now assume, and must from their first acquaintance with sunlight have assumed, their present conditions of air and water." This is plain writing, and will require the attention of our physical science professors.

The first chapter discusses the age of the earth; it varies little from an article published in the *Geographical Magazine*, Feb. 1877. It is pointed out that, in our ignorance of the origin of matter and light, we have no data for our physical sciences to go upon—that in the absence of this knowledge light and matter are due to the incomprehensible Creator; and so, those who guess at the earth's age "are at present without chart, compass, or sounding line on the fathomless and boundless ocean of eternity."

Chapter II. discusses the nebular theory of Laplace, and introduces several arguments from living authors tending to destroy confidence in that system. Professor Tyndall is quoted to show that existing laws have never been broken, and, as the air, water, and dust are subservient to the sun now, so they must have been in their nebulous and chaotic condition. Mr. Proctor is quoted to show that "it is no longer supposed, as in Laplace's time was the case, that the outermost planets were formed first." It is pointed out that "if we disarrange any one part of the system, as laid down by Laplace, we throw the whole out of gear; having done this we destroy the theory of internal heat, and we are reduced to one point—"This earth, including its nucleus, its air, and its waters, was developed from a nebulous condition" (p. 46).

Chapter III. gives us some curious details from the theory of the German astronomer Gruithuisen: this also appeared in the *Geographical Magazine* for March and April 1878. At p. 74 we find—"The nucleus of this earth was consolidated because the gases and the moisture were gradually attracted and separated from the nebulous mass, while the heavier atoms, slowly but perpetually subsiding to their own centre of gravity, became the solid nucleus of this earth." At p. 77, till the contrary is proved, "we will believe in the God of our forefathers; in the sun as His agent, in our solar system; and in the elements, as ordained by Him to be subservient to His laws from the Beginning to the End."

Chapter IV. details the laws of subserviency. It began when the nebulous mass was in a state of gravitation "aimless and endless." The first obedience was in the arrest of its motion, the conversion of it into rotation on its axis and revolution round the sun (p. 86.)—"Rotation on its axis must have been simultaneous with the arrest of aimless gravitation, as these actions are going on now they must have been the beginning of this globe." The vegetable and animal kingdoms are introduced as giving evidence of the action of extreme heat on internal matter. This heat is in all cases a direct or indirect action of the sun, and thus at p. 96—"From the moment of the first impulse we may suppose that evaporation took place, the light gases rose and the heavier subsided, the air and its winds were formed, the waters were condensed, and the solid molecules were consolidated," from a cold beginning. The heat of the interior earth, as depending on the theory of Laplace, is denied: the present sea level is reached by constant wear and tear, and by the constant consolidation and subsiding of the nucleus: mountains were formed by these actions, not by upheaval from imaginary forces. The law for the separation of the elements from chaos, for reducing them to their present condition, and for maintaining them, are clearly traced to the attraction, evaporation, and gravitation still holding good, and must continue so as long as the elements "owe obedience to the sun" (p. 117).

Chapter V. concludes the subject by a brief epilogue between the Creator, the Vapour and the Light. We have quoted the first two lines from the frontispiece: Vapour says, on its conversion to the planet Earth—

"Our present, and our future hang upon
Attention to my duty, and my love!"

The Creator is allowed to say in conclusion—

"'Tis very good! Forsake ye not My law!"

As contemporary works on the great problem of the day these books should be read together, the last destroys the foundation of the first, and will possibly produce a new era in physical cosmogony. We must not forget that although Laplace formed the sun after he had formed the planets, he was obliged "to consider the sun as the centre of a force" (*System of the World*, Laplace, vol. ii., p. 11), and Mr. Skertchly says "solar heat determines the broad climatic zones" (p. 307). The *Beginnings* applies the heat and the force. If our mathematicians, geologists, and astronomers are right in saying, that the harmony of this world has never been broken, and that the present laws are those of the beginning, it seems as if Mr. Malet points to the truth of that long-sought action. We must leave the verdict to a larger jury, contenting ourselves with remarking that both books are full of interest; the latter treating of the mechanical beginning as briefly as possible; the former treating scientifically many of the phenomena of the world we live in. Much information may be gained from both.

AMONG the articles published in recent numbers of the *Globus* are several descriptive of Sir Douglas Forsyth's Mission to Kashgar. These are chiefly notable for the excellent illustrations with which they are accompanied. The photographs and sketches taken by Captain Chapman are reproduced in a manner which does great credit to the engraver. Especially successful are the landscapes in which the distances and effects are shown with an artistic touch rare in wood-engraving. The most successful are "Kirghiz encampment in the Tigarmath valley," and "View of the Pamir from Yangi-Hissar," the latter giving a picturesque idea of the great meridional chain the existence of which was so long doubted.

Log Book.

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Return of the Dutch Arctic Expedition.—In our number for September (page 241) we gave an account of the proceedings of the 'William Barents' up to July 22nd, including her voyage along the north coast of Spitzbergen. Sailing from Vardö on the 23rd of July the explorers went northwards between Spitzbergen and Novaya Zemlya and were in the ice from the 1st to the 10th of August, on meridians 45° to 35° E. They then shaped a course to Novaya Zemlya, were in the Matoschkin Shar, coasted northwards as far as "Froost Kaap" to the east of Cape Nassau, and then, on a north-westerly course, reached their highest latitude in 78° 18′ N. on the meridian of 55° E. The 'William Barents,' from this position, made her way to Hammerfest and arrived there on the 23rd of September, after a cruise of two months in the Barents Sea. Thence she made a quick run arriving at Kelzen on the night of the 12th of October, and proceeding thence by canal to Amsterdam, with Commodore Jansen on board.

The Dutch explorers have done good work, and the success of their cruise is a happy presage for future useful labours in the same direction. They met with a cordial reception from their countrymen, and on the 23rd of October were entertained at a public dinner at Amsterdam, with the Burgomaster in the chair.

We gather the following additional particulars from the *Eigenhaard*, a Haarlem periodical. Lieut. Speelman undertook the magnetic observations. The pressure of wind and all meteorological observations were taken every hour, night and day. There was continual fog in August between Spitzbergen and Novaya Zemlya. They met the ice in 77° 10′ N. lat.: and 45° 40′ W. and were beset for ten days. They were then driven by a storm to the N.W. The ice of the Barents Sea was of two kinds: to the east it was flat and smooth as at the mouths of the Dutch rivers in winter; but to the west it was old, and heaped up to a height of 30 feet, so that it would be impossible to take a sledge or boat across it: more like a chain of mountains than an ice-field. The 'William Barents' encountered many dangers, and once, owing to thick fog, she was nearly caught in a position that would have detained her through the winter. In the beginning of August they appeared to be on the boundary line where the warm and cold currents meet. Up to that time they found that the temperature of the sea decreased with its depth; but here they met with cold and warm currents flowing one over the other. To make this clear Lieut. Beynen gives some detailed results. On the 1st of August they passed the first iceberg in the Barents Sea; and after the 7th they met with heavier ice than Beynen had ever seen before. With the telescope extraordinarily heavy ice was seen, against which the most powerful steamer could do nothing. They reached Cape Nassau on August 9th and sailed for Tromso on September 9th. Many interesting extracts are given in the *Eigenhaard* from Lieut. Beynen's Journal.

The Swedish Arctic Expedition.—On the 17th of October Mr. Oscar Dickson of Gottenburg received the following telegram from Professor Nordenskiöld, which was despatched from Irkutsk on the 16th. "Arrived with steamer 'Vega' safely at the mouth of the Lena, after clearing Cape Chelyuskin, the sea being nearly free of ice. We proceed immediately for Behring Straits and Japan." The telegram was sent by the little steamer 'Lena' (see our number for August 1878, p. 197) which proceeded up that river to Yakutsk, whence it was posted to Irkutsk.

We heartily congratulate Professor Nordenskiöld and his gallant companions, on the achievement of what is already one of the most important Arctic voyages on record.

Discovery of a new island on the Siberian Polar Sea.—The account recently published in the *Times* of the above discovery was so very inaccurate, that our readers may wish to know the real facts. The well known walrus-hunter and Arctic navigator, E. Johannsen, discovered, on the 3rd September last, in longitude 81° E. of Greenwich (due north of the Yenisei river), and latitude 77° 55′, a tolerably flat island about 2½ miles (German) long, to which he gave the name of "Ensomhaden" (Loneliness). Its highest point was 100 feet above sea level: the island itself was free from snow, poor in vegetation but much frequented by birds. To the west, north, and east the sea was free from ice, but to the south-east drift ice was to be seen. The presence of some types of animal life appeared to indicate that the Gulf Stream reached the western side of the island. On the north side the current sets strongly to the S.E. The ice indications were favourable everywhere, as long as one kept away from the Siberian coast. The new island is thus situated almost due east of Francis-Joseph land, and it is probable that, speaking broadly, it forms portion of the same archipelago.

Dust Storms in the Atlantic.—It has been a well-known fact among navigators of the Atlantic, meteorologists, and other scientific men, that a certain part of that ocean in the vicinity of the Cape de Verde islands has been characterised by occasional storms of fine red dust which have covered the rigging, decks, &c. of passing vessels. The origin of this phenomenon was discussed by Ehrenberg, Arago, Kamtz, Darwin, Maury, and others, but without any definite conclusion being arrived at. Dr. Gustav Hellmann, an able young meteorologist of Berlin, has favoured us with a copy of an interesting paper read by him before the Berlin Academy of Sciences on the 9th May, in which he discusses the phenomenon very exhaustively. Dr. Hellmann's arguments are based chiefly on the recent publication of the Meteorological Office of London entitled *Charts of Meteorological Data for Ten-degree Squares in the Atlantic.* These furnish him with details of 65 dust storms, which were observed by 1196 English vessels in the years 1854-1871, in the region contained between the meridians of 10° to 40° W. longitude, and the parallels of 20° N. to 10° S. latitude. The result of Dr. Hellmann's researches is to show that these storms prevail, or are mostly to be found between the parallels of 9° and 16° N. latitude. His conclusion respecting their origin is opposed to that of Ehrenberg and Maury, but coincides with that of all navigators and of some men of science such as Darwin and others, and is that the dust proceeds from the Sahara desert. Dr. Hellmann

appears to us to argue his theory very plausibly and fairly to answer the objections of Ehrenberg and others. He annexes two interesting reports by Mr. Sorby, President of the London Microscopic Society, and M. Tissandier on the microscopical examination of the atoms composing dust-storms.

Trans-Caspiana.—Steam navigation on the Caspian is as yet but little developed, and is chiefly confined to vessels plying between the ports of Astrakhan, Baku, and the southern ports. The trade in naphtha has received a new impetus, and Krasnovodsk and Briansk are partaking in the revival, the latter port being situated at the mouth of the Atrek, which is not far from Chikisliar, known for its produce of Chikir wine, which is exported to Russia. The Khivan products are usually conveyed to Krasnovodsk, but this year, owing to the disturbances among the Turkomans, the caravan journeyed straight to Alexandrovsk. Unfortunately the schooner which came to this port to convey the goods to Astrakhan was so small that half of them had to be left behind, and the entire cargo, which was destined for Nijni-Novgorod, did not reach Astrakhan till the beginning of August. The Alexandrovsk route is pronounced as preferable to that of Krasnovodsk, though the steamers visit the latter port twice a week and the former only once a fortnight. The disorders among the Turkomans continue, though General Lomakin has journeyed along the northern frontier of Khorassan, following the Atrek, and intended to occupy several points in the direction of Merv, with the view of coercing the predatory Turkomans, whose raids have rendered the Persian frontier so insecure.

Russian Explorations in Southern Bokhara, Hissar, &c.—On the 30th August M. Maief returned to Tashkent after a second excursion of 20 days duration in the mountainous country south of Bokhara. At Karchi he parted from the mission despatched to the Amir of Bokhara, and journeyed into the mountains by way of Guyar, during which trip he reconnoitred the road leading from Tengi-Khoram to the well-populated and extensive kishlak of Koristan, by way of Akbach and along the valley of the Kerchak-daria, which river, as well as the Koristan-daria, was previously unknown. M. Maief also explored another route of importance leading from Koristan across the mountains by the Tengi-davan pass to Shirabad. From the latter place M. Maief made for the Surkhan which he crossed near the kishlak of Kakaity and ascending its valley arrived at Regar and Sar-i-jui. To avoid returning by the way he came, M. Maief returned to Shahr-i-Sebz by the very difficult route explored by M. Oshanin during the same month, traversing the kishlaks of Sengri-dag, Batch, Tash-kurgan, and Yakobak. At Shahr, M. Maief took leave of the Amir of Bokhara and thanked him for the facilities afforded to him by the local authorities. This piece of exploration will fill up some important blanks in Mr. Ravenstein's map of Hissar compiled from the results of the last Russian expedition and published with our number for December 1876.

Triangulation of Ceylon.—In 1845 General Fraser made a military map of Ceylon based on triangulation, but his measurements have been found very unreliable as compared with the more recent triangulation. In 1857 Captain (now Major-General) Gosset, then Surveyor-General of Ceylon, measured very accurately in the Ngombo district a base of 28890·0601 feet, or about 5½ miles in length, and the present Ceylon triangulation was started from it. Mr. James O'Donnell observed with a 13-inch theodolite from 24 stations between 1858 and 1860, and Mr. James Mantell observed from 21 points between 1870 and 1873 with the same instrument, and also from Adam Peak and Kiripanagallo in 1876. Mr. Winizer also observed with a 12-inch theodolite from Colombo clock tower, Welihada jail and Pidúrutalagala in 1860. A base of verification of 29,860·04 feet length was measured at Batticaloa by Mr. J. J. Grimlinton in 1859, with a 100-feet chain, and the computed length of this base as calculated from the former base, through all the triangles to Batticaloa, differed from the observed base by only 0·64 link, or a little over five inches. Efforts are being made by Colonel A. B. Fyers, R.E., the Surveyor-General of Ceylon, to extend the triangulation up to Manaar and Jaffna, with the object of connecting it with the Indian triangulation, a series of which has been successfully thrown across the straits on to the island of Neduvan, where two stations were fixed by Major Branfill in 1875 as a *point d'appui* for the Ceylon triangulation.

Dr. Wilhem Junker's journeys in the S.W. portion of the Nile basin during the months of January to October 1877 have filled up various blanks in a region partially explored by Peney, Petherick and others between the routes of Schweinfurth and the Nile, about five degrees north of the Equator. Dr. Junker appears to have covered much the same ground as Marno in 1875, but he ascertained definitely that the Jei was not (as Marno thought) the upper course of the Yalo river or Bahr-el-Rohl, but belonged to another system altogether. A second journey brought Dr. Junker further west to the Abakah and Mundo countries. On the way thither he passed some streams which he took to be the head waters of the Yalo, and others which appeared to join the Issu. His last journey extended some considerable distance to the north-west up to Senba-Agad-Wow, a point touched by Schweinfurth in his travels (see *Heart of Africa*, vol. i. p. 191). It is to be regretted that Dr. Junker was unable to get southward and visit the Kibaly river, which is believed to rise in the mountains west of Lake Albert, and to form the upper course of the Welle.

M. Raffray in New Guinea.—M. Raffray has furnished to the Paris Geographical Society an account (published in their *Bulletin* for May last) of his recent researches in New Guinea. He and M. Maurice Maindron were both deputed on this mission by the French Ministers of Public Instruction, and the two left Toulon on the 20th of July, 1876, arriving at Ternate on the 4th December of the same year. From the latter place a small fleet of Malay schooners set sail, towards the close of the S.W. monsoon each year, for New Guinea and more especially for Geelvink Bay. They import blue and parti-coloured stuffs, iron, knives and glass, which they exchange with the Papuans for shells, trepang, mother-o'-pearl, massoi (a medicinal bark in use in all Malay countries) and birds of paradise plumages.

Before starting for New Guinea, M. Raffray and his companion made an excursion to Dodinga, in the island of Gilolo, then in a state of insurrection. Besides making some collections in this spot, they inspected some of the natives called Alfuros. The information supplied by M. Raffray respecting the natives led Dr. Hamy to conclude that besides the pure Malays, there are in Gilolo two distinct races, one a mixture of Malay and Papuan types (but inclining rather to the latter), and the other apparently descended from the Polynesians called *Indonesiens* by Dr. Hamy.

On the 17th January 1877 they finally set sail for New Guinea, and coasting along the west of Gilolo, entered into the Pitt Straits, between Batanta and Salwatty islands, landing at the N.W. extremity of the latter. The Rajah Abu-Kassim, proprietor of Mysol (by whose orders M. Raffray states a portion of the crew of the 'Franz' were murdered not long since), received the travellers kindly, but warned them against penetrating inland. After a brief stay at Salwatty, M. Raffray proceeded to Dorey, a locality already known to European readers from the reports of various travellers. He gives a succinct account of the habitations, manners, and religious beliefs of the Papuans, and of the Mafors who live along the sea shore and subsist by fishing. M. Raffray observes that exploration in the interior is a very difficult matter owing to the want of navigable streams, the density of the forests, and absence of communications. The inhabitants of the villages scarcely ever wander far from their homes, and the country is most unproductive, even rice having to be imported. After making an excursion to Aiambori and Andai, M. Raffray set sail in three native canoes with a crew of thirty Papuans for Amberbaki. Amberbaki is a district situated about 80 miles westward, notable for some rare species of birds of paradise. M. Raffray was visited by some members of a neighbouring cannibal tribe called Karons, whom he photographed. After his return to Dorey, he made another excursion eastward to Mafor island, where the Wandamen islanders were carrying on continual depredations and making raids on the Mafor natives. Leaving this island he visited the Misori islands, three in number, which lie still further east. This formed the limit of M. Raffray's travels, and after a brief stay here he returned to Dorey, whence he returned home in the middle of July, 1877.

ATLAS OF THE RIVER AMAZONS.

To the Editor of the "GEOGRAPHICAL MAGAZINE."

SIR,—In the map room of the Royal Geographical Society there is an Atlas of the River Amazons, the work of officers of the Brazilian Frontier Commission, which can hardly have been known to the writer in the *New York Herald*, whose article on "A new Survey of the Amazon" is reprinted in your September number. That work is, I fear, known to comparatively few, and has never obtained the notice it really deserved; perhaps because published without any memoir to state the labour and care and skill it really represents. A mere note for instance, in the corner of one map gives the elevation above the sea of Manáos and its longitude; and who guesses from this that the first was deduced from thousands of barometrical readings, and the second from (among the rest) more than a hundred lunar culminations? At Pará, too, some, though not so many, good observations for absolute longitude were taken, and the chronometrical longitude from Rio de Janiero was carefully determined at least twice. By 1868 Captain Costa Azevedo and the officers under him had nearly doubled the amount of detail in their map of the Amazons; but unfortunately there has been no second edition published. Still any one who will look at it as it now is will see that the main Amazons is not so unmapped as the *New York Herald* article asserts. Channels and sandbanks and rocks (the last not common) *are* marked—I do not say all: nothing but a complete survey could do this. The soundings, too, are numerous.

I am unwilling to occupy more of your space, but recollecting the kindness I met with from Brazilian officers and surveyors on the Amazons—one of my many pleasant recollections of Brazil—I have felt it almost a duty to say thus much.

Of course a complete survey of the Amazons, or any great section of it, would be most valuable and interesting; but from an article in the *New York Times* (reprinted in the *Times* of September 18th) it seems that the Americans did not propose this, but merely a running survey, the work of a few weeks. Whether this will add much to our previous knowledge may be doubted.

The River Madeira needs for navigation not so much a running survey of the whole, as a very exact and minute examination of some particular places; and for this the season of lowest water, not that of flood, should have been chosen.

I am, &c.,

W. CHANDLESS.

5, PORTMAN STREET, W.

HALLE GEOGRAPHICAL SOCIETY.

October 9th, 1878.—Dr. KIRCHHOFF, President, in the chair. The learned President referred in feeling terms to the loss which the geographical world had sustained through the death of Professor A. Petermann. On the motion of the President, Professor F. von Hochstetter of Vienna and M. H. Duveyrier of Paris, were elected honorary members as well as several other scientific gentlemen as corresponding and ordinary members. The paper was one by Dr LEHMANN on "Travels in Norway and Traces of the Glacial Period in that Country." The lecturer spoke of the roads and method of travelling in Norway and gave a description of the natural features of the country illustrated by numerous views and maps. He also spoke at length of the various evidences of a former glacial period, which he had observed and which had also formed the base of Professor Kyerulf's arguments. The PRESIDENT announced the presentation to the Society from the Minister of Education of an important wall map of the moon, about six feet square, exhibiting the laborious astronomical researches of Herr Jul. Schmidt of Athens.

NOTICE.

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